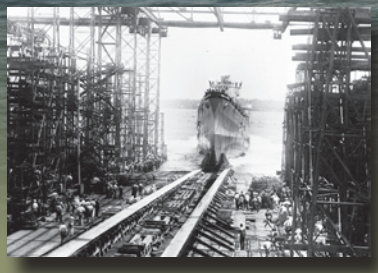
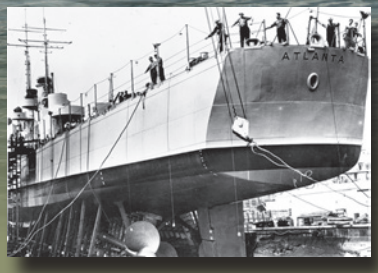
US NAVY ATLANTA-CLASS LIGHT CRUISERS 1940–49





MARK LARDAS

ILLUSTRATED BY STEFAN DRAMIŃSKI

NEW VANGUARD 340

US NAVY ATLANTA-CLASS LIGHT CRUISERS 1940–49

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US NAVY ATLANTA-CLASS LIGHT CRUISERS 1940–49

INTRODUCTION

It was a funny-looking cruiser. No one in Task Force 16 (TF16) had seen anything quite like it before the ship joined TF16 on May 16, 1942. It was handsome, modern – even futuristic in appearance – compared to the older cruisers in the task force. It had a clipper bow, sleek hull, and tiers of guns. As cruisers went, it was lightweight, maybe even featherweight. A boatswain's mate called it an oversized destroyer.

It seemed like a stretched-out Mahan-class destroyer. The Mahans had eight 5in./38cal guns in four twin mounts. This ship doubled that number, carrying 16in. eight of the newest turrets, with six turrets centerline, three forward and three aft. They were superfiring, with the highest turret two levels above the lowest. It had two waist turrets amidships, one on either side.

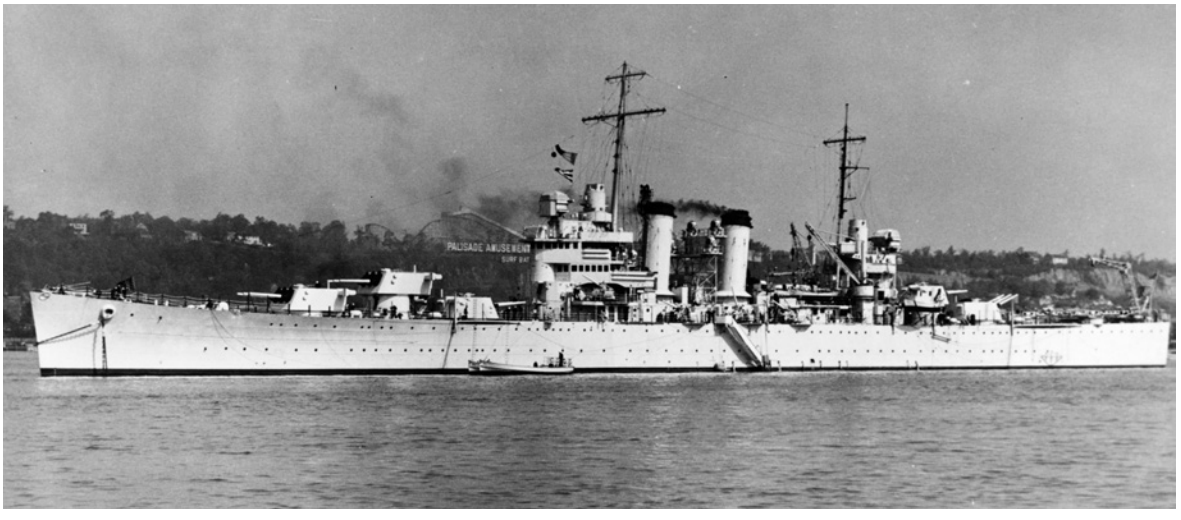
It also carried depth charges and torpedo tubes. Every other US Navy cruiser class landed their torpedo tubes in the 1930s, except the ancient Omaha class. Even Omahas did not carry depth charge racks, much less depth charge throwers like this cruiser had.

According to a senior chief, this cruiser, *Atlanta*, was the lead ship in a class replacing the Omahas. They were intended as destroyer leaders, leading destroyer flotillas in torpedo runs against the enemy's battle line in surface engagements.

The battle of Midway was the first combat appearance of the Atlanta-class cruiser. *Atlanta* can be seen on June 6, 1942, in front of *Hornet* (CV-8) and *Phelps* (DD 360). *Atlanta* proved the worth of these ships as antiaircraft ships. (USNHHC)

The US battle line was at the bottom of Pearl Harbor, following the surprise Japanese carrier attack in December 1941. The future lay with aircraft carriers, like *Enterprise* and *Hornet*, which formed the heart of TF16. The battle fought near Midway in June 1942 involved aircraft. This cockleshell cruiser would be leading no torpedo runs in this battle, so what role could it play?

Atlanta decisively answered that on June 4, 1942. Its 5in./38cal guns were the most effective heavy antiaircraft gun of World War II. *Atlanta* carried twice as many of them as any other US cruiser



The 1922 Washington Treaty triggered a cruiser-building race. The 1930 London Treaty attempted to limit it. Instead of building 6,000–8,000-ton cruisers armed with 6in. guns, Japan and the US built large 10,000-ton light cruisers, including *Brooklyn*, shown here. (USNHHC)

or aircraft carrier at Midway. It also carried 16 1.1in. guns in quad mounts – as many as the carriers – and eight single-mount 20mm Oerlikon guns. It had the most formidable antiaircraft battery of any ship present, its fire-control being optimized for antiaircraft defense.

The ship intended to lead destroyers in torpedo runs shredded Japanese aircraft attacking *Hornet*. *Atlanta* and its sisters gained a new role that day: that of antiaircraft cruisers. *Atlanta* so perfectly fitted that mission that the US Navy built more. Such was their success that the public eventually believed these ships were designed and built as antiaircraft cruisers.

DESIGN AND DEVELOPMENT

Genesis

The origins of the Atlanta class and its successors were rooted in three naval limitations treaties of the 1920s and 1930s: the 1922 Washington Treaty and the 1930 and 1936 London Treaties. The first was an attempt to rein in the post-Great War dreadnought race involving the United States, Great Britain, and Imperial Japan.

The Washington Treaty succeeded in stopping the battleship race, but kicked off cruiser-building and destroyer-building races among the five naval powers (including France and Italy) which signed it. Worse, especially from the standpoint of budget-minded Great Britain, it increased the size and cost of new cruisers. Prior to this treaty, the typical cruiser built carried 5in.–6in. guns and displaced between 4,000 and 6,000 tons. Treaty cruisers carried 8in. main batteries and displaced 10,000 tons.

Britain called for a second naval limitations treaty at London in 1930 to rein in the cruiser and destroyer races. It regulated the size of warships smaller than battleships (including destroyers), set aggregate tonnage limits for different warship categories, and created new rules for submarine warfare. It also created a new class of cruiser, the light cruiser, limited to guns no greater than 6.1in.

This treaty channeled cruiser construction into cruisers with 6in. guns, which Britain desired, yet it failed to curb the size of cruisers. Japan and the

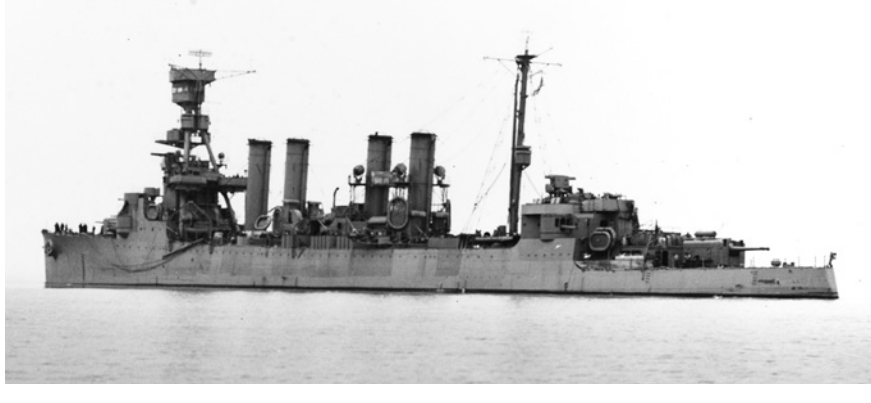
US built 10,000-ton *light* cruisers, with main batteries of 15 6in. guns. Due to its far-flung commercial empire, Britain needed more cruisers than either the US or Japan. The only way to get enough cruisers for its needs while staying within its allocated cruiser tonnage was by building smaller cruisers. Their 6,000–8,000-ton cruisers could not meet 10,000-ton light cruisers on equal terms.

In December 1935, Britain called yet another naval limitations conference. Signed in March 1936, the Second London Treaty limited future battleships to 35,000 tons and 14in. guns, and cruisers to 8,000 tons and 6.1in. guns, through to the 1942 expiration of the treaty. Britain, the US, and France signed this treaty, though Japan and Italy did not. It contained escalator clauses allowing signatory nations to opt out of some limits if Japan and Italy did not eventually sign the treaty. They never did, so the Second London Treaty was largely a dead letter to the US Navy by 1938. It effectively ended when World War II began.

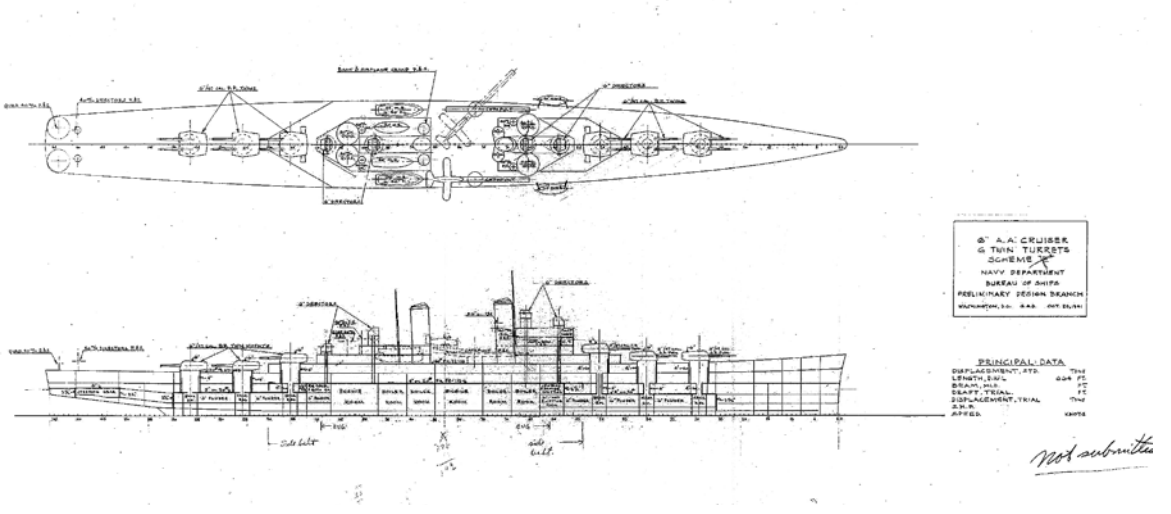
The Second London Treaty led to the Atlanta class. The US Navy was happy to continue building 10,000-ton Brooklyn-class 6in. cruisers with five triple turrets that were currently planned or under construction, but agreed to the 8,000-ton limit for future cruisers. The Omaha class, designed prior to World War I and completed in the early 1920s, were "aging out." The 1934 Vinson-Trammell Act required an "underage" navy, one with ships younger than 16 years old. This required the replacement of the oldest of these in fiscal year 1939. An 8,000-ton cruiser worked perfectly as an Omaha replacement. Design work on these replacements had to start in 1936, so used Second London Treaty restrictions.

The Omahas were the last cruisers designed prior to the Washington Treaty. When designed, they were large for light cruisers, displacing 7,000–9,000 tons (depending on load). They were traditional multi-mission light cruisers. As built, they could serve as scouts, destroyer leaders, antisubmarine warfare (ASW) vessels, and minelayers, as well as fighting a fleet engagement. Since this new class of cruiser was intended to replace the Omahas, the Navy's General Board, responsible for ship design, wanted them to serve similarly, as multi-mission ships.

The Navy Board was particularly interested in having the new cruisers serve as destroyer leaders, but 10,000-ton cruisers were too large and slow to satisfactorily fill that role. A smaller cruiser was needed – one they were being forced to build by treaty. From the outset, it wanted a cruiser capable



The failure of earlier treaties to limit cruiser size led to the never-ratified 1936 London Treaty. What became the Atlanta class was intended to replace the elderly Omaha-class cruisers, which included *Detroit* (CL-8) shown here. The Atlantas followed the weight limitations of the never-ratified Second London Treaty, which the US Navy provisionally agreed to follow. (USNHHC)



The Navy Board wanted to replace the Omahas with an 8,000-ton cruiser armed with 6in. dual-purpose guns, like the design in this drawing. Ultimately, the plan was "not submitted" because the dual-purpose 6in./47cal gun could not be developed in time. (USNHHC)

of leading a torpedo run, serving in an antiaircraft role, and coordinating ASW activities. Unlike other US cruisers, this one would carry torpedo tubes, depth charges, and sonar. The Navy Board also wanted a 6in. main battery.

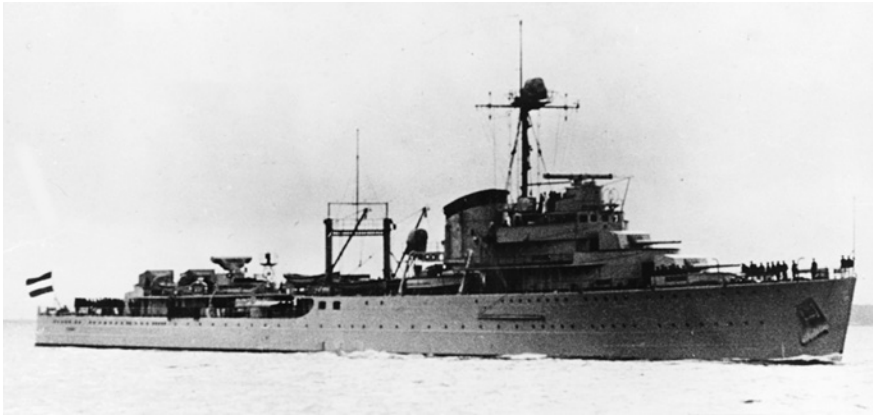
A 6in. gun fired a 152lb round. The 6in./47cal guns the Navy mounted on its new light cruisers had a high rate of fire (8–10 rounds per minute) but could only elevate 60 degrees. This was too low for antiaircraft guns. The 5in./38cal guns the US Navy used on its destroyers and cruisers were true dual-purpose guns. They fired 15–22 rounds per minute and elevated 85 degrees. Their rounds only weighed 55.2lb though, one-third that of the 6in./47cal.

A 10,000-ton displacement cruiser could carry both heavy 6in. and 5in. batteries, with the 6in./47cal guns intended for surface actions and the secondary 5in./38cals serving an antiaircraft role. An 8,000-ton cruiser could not carry both caliber guns in sufficient quantities. If it fielded both, the cruiser would have too few 6in. guns for a surface engagement and too few 5in. guns for antiaircraft defense. The new cruiser could thus carry only one size gun.

The Navy was developing an antiaircraft version of its 6in./47cal gun, one that elevated 85 degrees with a rate of fire of 12 rounds per minute. An 8,000-ton cruiser with a main battery of eight dual-purpose 6in. guns would work in both surface warfare and antiaircraft roles. However, development of this new gun and its turret lagged. To build their cruisers in a timely manner, the Navy Board settled on a 5in./38cal main battery, with 16 guns in the reliable Mk29 turret.

Foreign contemporaries

The Navy Board's design was for a cruiser with few foreign contemporaries. Light cruisers had been built to serve as destroyer leaders for almost as long as destroyers had been around, but destroyer-leading cruisers fell out of favor after the Washington Treaty. No nation wished to expend new cruiser tonnage on small cruisers to lead destroyers. Light cruisers designed prior to the Washington Treaty (such as the Omahas and virtually all Japanese light cruisers) filled that role. Alternately, large destroyers (such as the US Porter or French Le Fantasque classes) could serve as destroyer leaders.



The only cruisers intended as true destroyer-leaders designed and built between the two world wars were from Netherland's Tromp class. *Tromp* (shown) was completed before Germany invaded the Netherlands in May 1940. Its sister, *Jacob van Heemskerck*, was towed to Britain incomplete. (USNHHC)

Some light cruisers built in the 1930s (including Italy's Alberto di Giussano class, France's Duguay-Trouin class, and the Dutch *DeRuyter*) could be destroyer flotilla leaders. Britain's Arethusa-class, 5,220-ton vessels with six 6in. main guns and four 4in. antiaircraft guns were intended as trade protection cruisers. Built in the mid-1930s, they could act as destroyer leaders. Only two navies built destroyer-leading cruisers in the late 1930s. The Netherlands laid down two Tromp-class light cruisers in 1936 and 1938, while Britain ordered nine Dido-class cruisers between 1936 and 1938.

The *Tromp* and its sister *Jacob van Heemskerck* were the only cruisers specifically built as destroyer leaders in the 1930s. Each was intended to lead a planned 12-destroyer flotilla for the Royal Netherlands Navy. (Construction started on only four destroyers before World War II started.) The Tromps displaced only 3,350 tons, but were heavily armed, intended to carry three twin 150mm turrets, four single 75mm antiaircraft guns, six 533mm torpedo tubes, and a floatplane.

All these cruisers had main batteries significantly heavier than those of a destroyer, even that of the Porter or Le Fantasque classes: a six–eight 150–155mm gun main battery. They also had extremely weak heavy antiaircraft batteries, typically only four guns, ranging from 75–102mm. They could overpower enemy destroyers and hold their own against other light cruisers, but would repel an air attack with difficulty.

The British Dido class was more intended as an antiaircraft cruiser than a pure destroyer-leading cruiser, although it could lead torpedo destroyers. HMS *Argonaut* was the second Dido-class cruiser built and one of the few completed with ten 5.25in. guns. (AC)

The exception was Britain's Dido class. In the mid-1930s, Britain desired modern destroyer-leader cruisers. It had been using pre-treaty light cruisers, some dating to World War I, in that role. By 1935, they were old. The Royal Navy was also getting increasingly concerned about the threat posed by aircraft. The Royal Navy had aircraft carriers, but virtually no aircraft. Until 1939, aircraft and aircrew were provided by the Royal Air Force, which had little interest in carrier aircraft. It begrudged every shilling not spent

on strategic bombers. The Royal Navy thus always had too few aircraft, and those available were second rate.

The solution was ships with heavy antiaircraft batteries. In 1935, C-class cruisers *Coventry* and *Curlew* were converted to antiaircraft cruisers. The World War I-era light cruisers' main batteries were replaced with ten high-angle 4in. guns and two eight-gun 2-pdr pom-poms. Four others were similarly converted by 1939. The Royal Navy's new 9,000–10,000-ton light cruisers carried eight 4in. HA (high-angle) guns.

The Admiralty wanted its new destroyer-leader cruisers to have a dual-purpose main battery that had strong antiaircraft capabilities while being reasonably powerful against surface warships. The Royal Navy was designing a dual-purpose 5.25in./50cal gun in a twin turret to provide an antiaircraft battery for the King George V-class battleships ordered in 1936. It had an 80lb round which could reach 46,500ft at maximum elevation, firing eight rounds per minute.

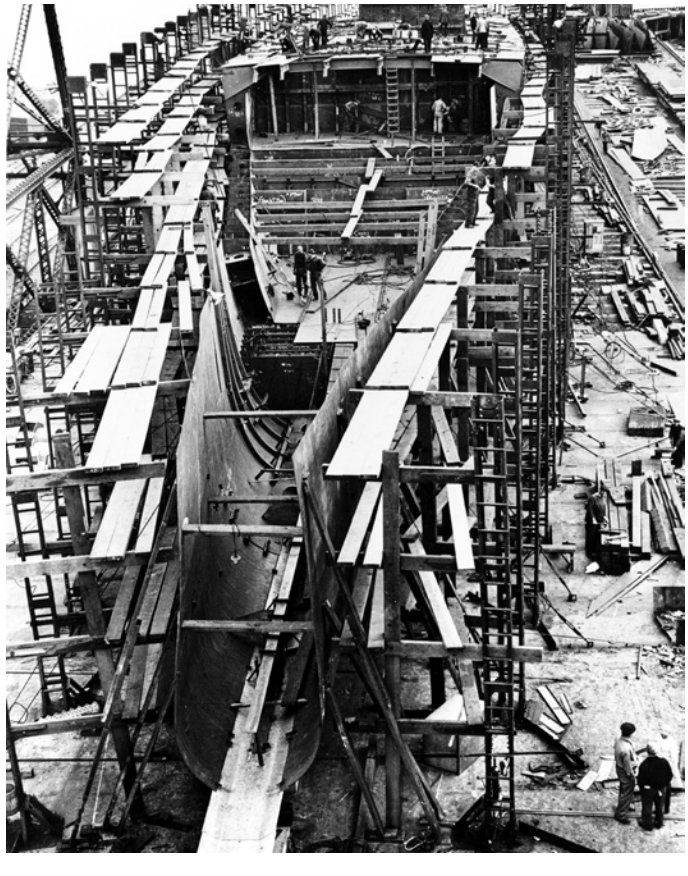
They felt this gun and turret would work for its new destroyer-leader light cruiser. The result was the Dido class. It displaced 5,770 tons, could reach 32.25knts, and carried a main battery of ten 5.25in. DP (dual-purpose) guns and two quad pom-poms. It also carried two triple 21in. torpedo tubes, depth charges, and eight light antiaircraft guns. The US Navy paid close attention to this design.

Design

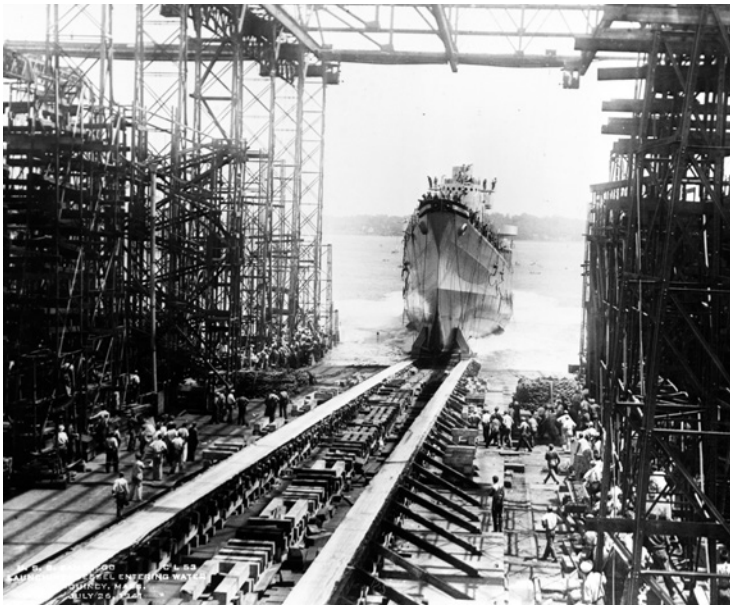
In 1936, the Naval Board began design of what became the Atlanta-class cruiser. It is sometimes said a camel is a horse designed by a committee, the result of conflicting and mutually exclusive requirements. This description fits the Atlanta class. The most fixed requirement in its design was tonnage. Due to informal agreements with the Royal Navy and formal London Treaty conditions, tonnage was to be between 5,000 and 7,000 tons, dictating a maximum size.

Next in priority was speed, but that depended on its ultimate purpose: a 36knt top speed for working with destroyers or 33–34knts if intended to operate with cruisers. Two knots was not a trivial difference. Water resistance grows as the cube of the speed, so a 2knt difference in top speed could require doubling the horsepower. The extra engine size had to come out of a limited weight budget at the expense of armament and range.

A lighter broadside and less bunker space were accepted. The Navy's perceived primary foe was Japan;



Construction on *Atlanta* started on April 22, 1940, when the keel was laid in Kearny, NJ. By June 1940, much of the bottom plating and framing was installed. The Atlantas were built using traditional shipbuilding techniques, with each frame and hull plate attached on the building ways. (USNHHC)



Although *San Diego* (CL-53) was the third ship in the class, it was the first one laid down and the first launched. Here, it is shown sliding down the ways at Bethlehem Steel's Fore River Yard on September 6, 1941. (USNHHC)

fighting on the wide expanse of the Pacific Ocean was expected. A minimum 8,000nm range was required; a 10,000nm range desirable. Armament had a lower priority. The General Board wanted a design with the heaviest main battery possible, while carrying both torpedoes and depth charges. A strong surface and antiaircraft battery was desired.

These contradictory speed, range, and armament requirements had to be folded into a single design. That design had to be completed in time to add the vessels to the Fiscal Year (FY) 1939 building program. Over the next two years, the General Board considered 25 different possibilities for this new cruiser. The largest hit 8,400 tons, the smallest 3,500 tons. Speeds of the different designs ranged from 32.5–36knts.

The main batteries alternated between 6in. and 5in. guns. Most opted for a single size, although five designs mixed a 6in. main battery with a dual-purpose 5in. secondary battery. These were discarded. Mixed battery designs required hulls too large for the tonnage allocated or delivered a main battery or antiaircraft battery too weak to be effective. Since the dual-purpose 6in. would be unavailable by FY 1939, in February 1938 the Naval Board settled on a design with 16 5in. guns and three quad 1.1in. guns.

This design had a standard displacement of 5,990 tons. It was intended to go 32.5–34knts, which required engines developing 70,000SHP. It carried fuel bunkers with fuel to take it 9,000nm at 15knts. Guns, machinery, and hull left little available tonnage for armor. Only a thin layer of belt and deck armor over the magazines and machinery spaces could be installed. Turret protection was limited to stopping splinters. A direct hit by a 5in. or larger shell would penetrate the turret.

An alternative design eliminated four 5in. guns to allow better protection. This design increased belt and deck armor, and shielded the gun houses with 4in. of armor. However, the desire for greater gun power prevailed and this final design was discarded.

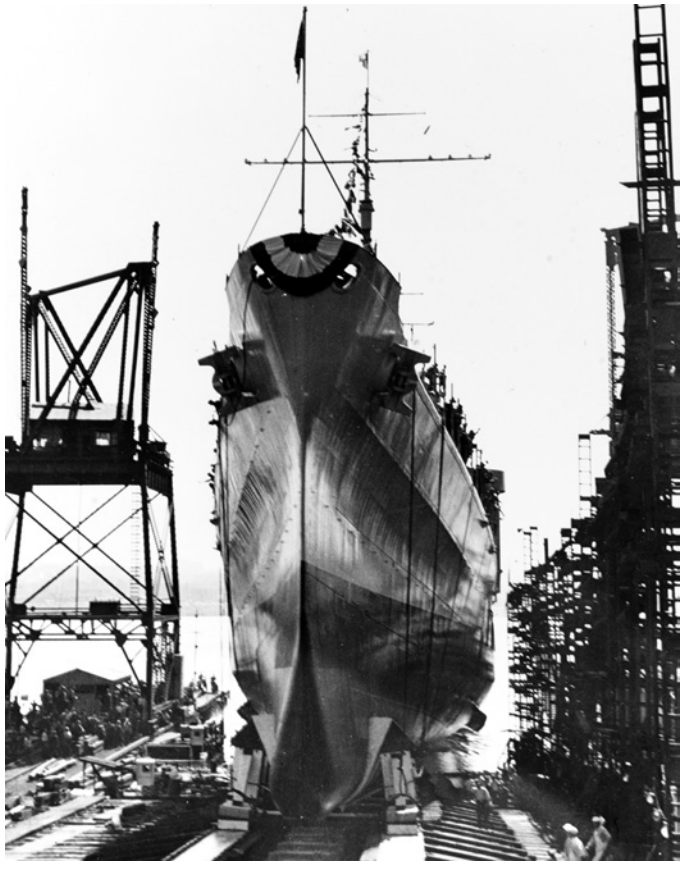
Powerplant size also generated considerable debate. The Naval Board ruled 70,000SHP was too light for the upper ranges of top speed. To reach 33knts, a 75,600SHP was required; for 34knts, 87,600SHP. Either increase in horsepower would require extra weight in a tight design. The 75,600SHP design increased weight by at least 60 tons, while the 87,600SHP option added 200 tons. Ultimately, the Naval Board opted for the lower horsepower option, 75,600SHP.

The preliminary design was approved in July 1938. Standard displacement was now 6,000 tons, with 7,400 tons design displacement. This allowed the larger powerplant, and provided tonnage for auxiliary diesel-powered

electrical generators, two triple torpedo tubes, sonar, and depth-charge racks. The design initially had a 100kw generator aft and a 25kw generator forward, but these were upgraded to two 250kw generators.

It placed the main guns in eight twin turrets. Six were mounted centerline, with three superfiring turrets forward and three aft. Two others were mounted on the weather deck aft of the machinery spaces to starboard and port. The ships also carried three quad 1.1in. guns: one placed on each side of the bridge and one centerline just forward of the aft 5in. turrets. To round out the antiaircraft suite there were eight .50cal machine guns.

The hull mimicked the lines of the Brooklyn class and the *Wichita*, the last cruisers built before the Atlantas. The hull incorporated a bulbous bow and a transom stern. Bulbous bows were relatively new. Naval architects began adding it after towing tank tests indicated the bulb improved performance at high speeds. It reduced bow turbulence at speed by filling a low pressure area in the stem which induced turbulence.

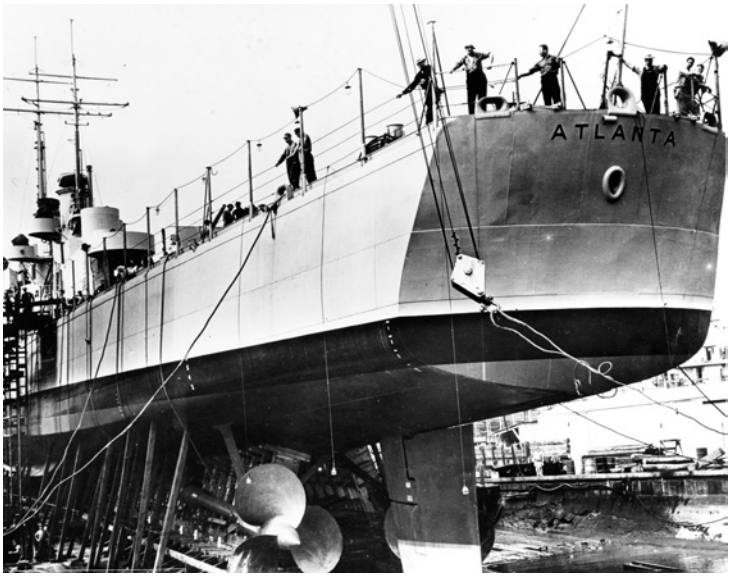


The bow bulb on the Atlanta-class cruisers can be plainly seen in this pre-launch photograph of *Atlanta*. It filled the low-pressure area that formed ahead of the bow at high speeds, reducing turbulence resistance. (USNHHC)

The transom stern was an artifact of previous cruiser designs, incorporated to provide hangar space for floatplanes. The Atlantas did not carry aircraft or catapults, but it was simpler to reuse a tested hull form. A feature unique to the Atlanta-class hull was a knuckle in the bow that ran to aft of the second 5in. mount. This broadened the bow above the second deck (the deck below the main deck), which increased that deck's available space and also improved seakeeping, deflecting waves away from the bow, leaving the forecastle drier.

The design's most significant advance was the unseen powerplant. US Navy warships used steam turbines, with steam generated by fuel oil-fired boilers. The higher the boiler pressure, the greater the efficiency of the boiler. To fit a powerplant capable of generating 75,600SHP in the volume and weight allocated, a new generation of boilers was installed, which ran at a higher temperature and pressure.

Brooklyn-class cruisers built in the mid-1930s used boilers operating at 648° Fahrenheit (F) and 400psi. The St Louis-class ships, immediately preceding the Atlantas, had 700° F, 565psi boilers. The Atlantas were fitted with boilers that ran at 850° F and generated 665psi. They were unique. Boilers in the subsequent wartime Cleveland class still ran at 850° F, but reverted to the 565psi of the St Louis class. The most visible token of the Atlantas' high-pressure boilers were its two tall, thin funnels, needed to provide the draught required. The funnels contributed to the ship's tall silhouette.



The first Atlantas were fitted with a high-pitch three-bladed propeller. It was supposed to increase thrust, but it created cavitation that caused severe vibration when the ships traveled in a 20–30knts speed range. (USNHHC)

The Atlantas were also fitted with deep-pitch three-bladed propellers to maximize thrust. The designers believed the combination of high-pressure boilers and deep-pitch propellers would let the Atlantas reach a top speed of 35 or 36knts. *Atlanta* and *Juneau*, the two Atlantas built at Kearny, New Jersey, were fitted with these propellers, which proved unsuccessful. They were too powerful, each blade moving enough water to create severe cavitation. This occurs when water pressure drops enough to cause dissolved air in water to come out of solution.

The resulting bubbles collapse when the water returns to normal pressures, creating turbulence. During sea trials, the resulting turbulence created vibration severe enough to trip circuit breakers throughout the ship and threaten damage to radio, radar, and gyrocompass. Vibrations shook the after-three turrets badly enough to render them unusable. Although *Atlanta* hit a trial speed of 34.22knts with these propellers, they were soon replaced with lower-pitch four-bladed propellers. These solved the vibration issue at the cost of a 2knt reduction in top speed.

A more significant propulsion innovation for cruisers was introduced with *Atlanta*, the first cruiser design with alternating boiler rooms and engine rooms. Benson-class destroyers built in 1938 introduced alternating boiler and engine rooms. Previous cruiser designs had two boiler rooms located ahead of two engine rooms. Alternating the boiler and engine rooms increased combat survivability.

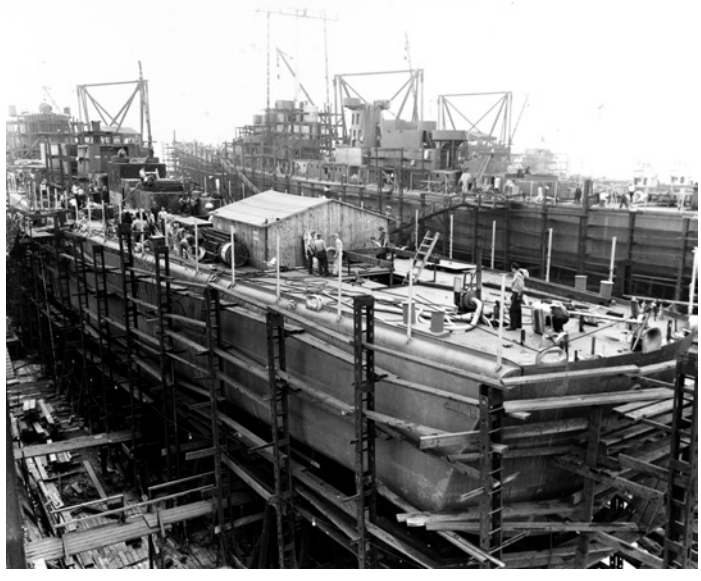
With the traditional arrangement, a torpedo hit flooding two machinery compartments had a two-thirds chance of knocking out both boiler rooms or both engine rooms, immobilizing the ship. Having alternated boiler and engine rooms meant at least one of each remained available, even after losing two compartments, which assured mobility. More importantly, it meant power to run pumps and electric dynamos remained available, improving damage control.

Like all Treaty designs, the final design was a compromise, attempting to cram as much capability as possible within a limited displacement. As with all compromises, there were prices to be paid. With the Atlantas, their biggest design weakness was stability. The tall smokestacks, three levels of guns, gun directors even higher than the guns, and deck-mounted torpedoes and depth charges yielded an alarmingly small metacentric arm.

The metacentric arm is the difference between a ship's center of gravity (CG) and its center of buoyancy (CB). A ship tips around its CB. The CG, which has to be below the CB, serves to right the ship as it rolls. The greater the distance (or metacentric height) between the two, the greater the righting moment produced. The short metacentric distance on the Atlantas left them

vulnerable to capsizing. Adding more weight topside would further decrease the distance, limiting future growth.

The first four Atlantas were ordered in April 1939, part of construction authorized by the Naval Act of 1938. Two – *Atlanta* (CL-51) and *Juneau* (CL-52) – were built at the Kearny, New Jersey, Federal Shipbuilding and Drydock yard. *San Diego* (CL-55) and *San Juan* (CL-54) were laid down at Bethlehem Steel's Quincy, Massachusetts, yard on Fore River. Both pairs were built in adjacent slips. Construction on all four began in spring 1940.



All eight Atlantas were built in pairs. Typically, one ship in each pair was laid down two weeks to two months before the second. This picture shows *Juneau* with *Atlanta* behind it, both in an advanced stage of construction. (USNHHC)

Equipment

The hull and machinery of an Atlanta-class cruiser was the platform for its weapons. Since the Atlantas were intended as destroyer leaders, their weapons went beyond those traditional in World War II US Navy cruisers, big guns capable of engaging other warships and antiaircraft guns. Atlantas also carried torpedoes and, uniquely among US Navy cruisers, depth charges.

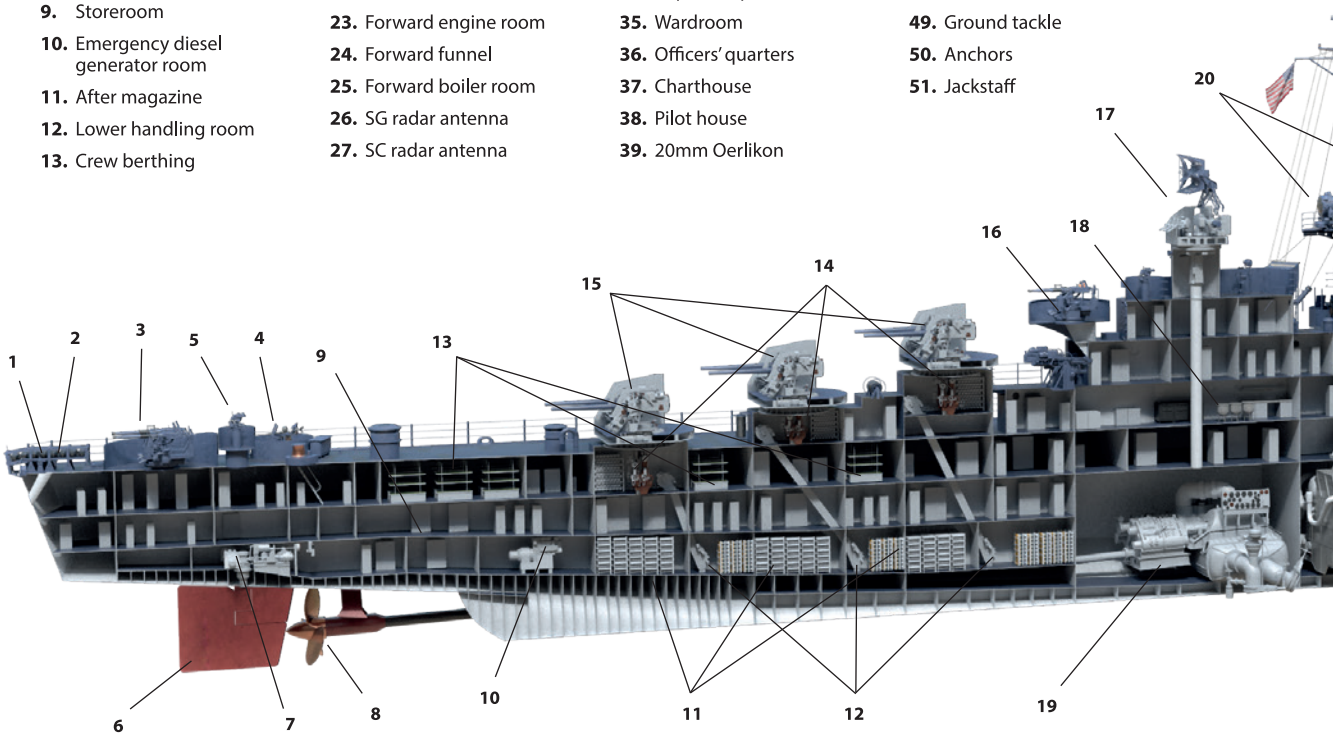
The main battery of the Atlanta-class ships consisted of 5in./38cal DP guns. Introduced in 1934, it was the most effective dual-purpose gun of World War II. It fired 54–55.18lb antiaircraft rounds, common rounds weighing 55.18lbs and white phosphorous and illumination rounds of 53lbs and 54.4lbs respectively. The gun could reach a surface target up to 18,200yds away with a special common round (intended for use against ships). It could loft an antiaircraft round 37,000ft up, and could reach aircraft flying at 30,000ft 14,000yds distant.

Special common rounds could penetrate 5in. armor at 4,000yds and 2in. armor at 11,000yds. An antiaircraft round could penetrate 1.5in. armor at 10,000yds. A special common round had a 2.04lb bursting charge, while an antiaircraft round had a 7.25–8.4lb bursting charge. Although the 5in./38cal had separate shell and cartridge, each gun could fire 15–22 rounds per minute.

The Atlantas were unique among US Navy cruisers in having a main battery of 5in./38cal guns. They also carried 16 (for the first four) 5in. guns, more than any other US cruiser, as this photograph of *Atlanta* shows. (USNHHC)

KEY

1. Smoke generator
2. Depth charge racks
3. Quad 40mm
4. 20mm Oelikon
5. Mark 31 Director
6. Rudder
7. Emergency steering room
8. Propellers
9. Storeroom
10. Emergency diesel generator room
11. After magazine
12. Lower handling room
13. Crew berthing
14. Upper handling room
15. 5in gunhouse
16. Twin 40mm
17. After gun director
18. Galley
19. After engine room
20. Searchlights
21. After funnel
22. After boiler room
23. Forward engine room
24. Forward funnel
25. Forward boiler room
26. SG radar antenna
27. SC radar antenna
28. Foremast
29. Radio center
30. Combat information center
31. Forward gun director
32. Coding room
33. Plotting room, internal communications, gyrocompass
34. Captain's quarters
35. Wardroom
36. Officers' quarters
37. Charthouse
38. Pilot house
39. 20mm Oerlikon
40. Forward magazine
41. Lower handling room
42. Upper handling room
43. 5in. gunhouse
44. Diesel generators
45. Crew quarters
46. NCO stores
47. NCO quarters
48. Chain locker
49. Ground tackle
50. Anchors
51. Jackstaff



A

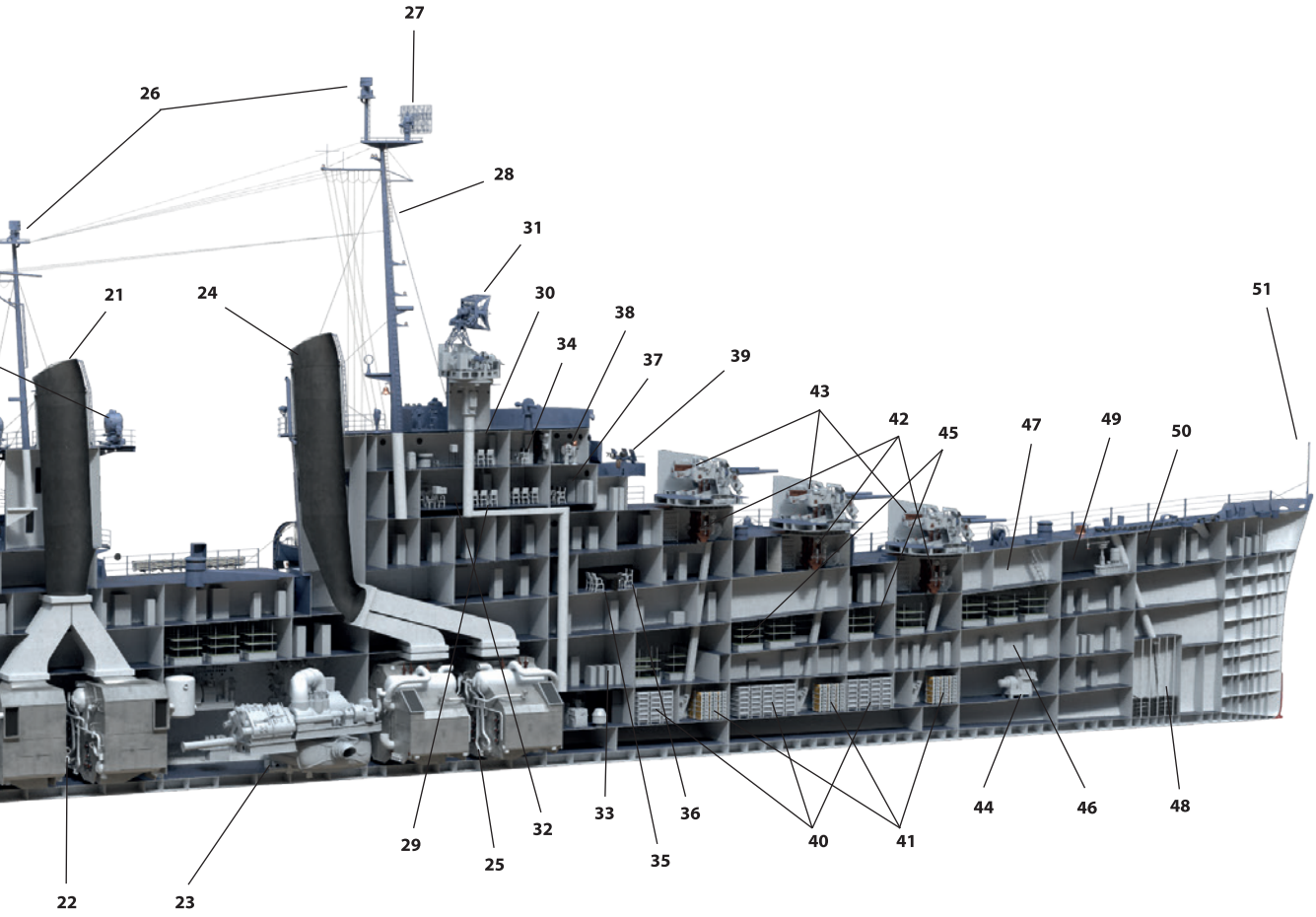
USS *SAN JUAN* (CL-54)

San Juan was the fourth of the four Atlanta-class cruisers authorized in 1938. Laid down on May 15, 1940, at the Fore River Shipyard in Quincy, Massachusetts, it was launched on September 6, 1941, and commissioned as a United States Navy warship on February 28, 1942. This cutaway shows *San Juan* as it appeared at the end of the war in 1945.

When commissioned in 1942, it was armed like the rest of its sisters. In addition to 16 5in. guns, it carried four quad 1.1in. "Chicago Piano" antiaircraft guns, eight single 20mm guns, two quad torpedo tubes, and a full antisubmarine warfare suite: two depth charge racks with ten depth charges and six K-gun launchers with four depth charges each.

By 1943, it became apparent that the Atlantas were the Navy's best antiaircraft cruiser, and the surviving ships abandoned their other roles. By the time the war ended, *San Juan*'s K-guns had long since been removed, and its medium and light antiaircraft guns significantly augmented. The 1.1in. guns had been replaced by 40mm Bofors and a pair of 20mm guns added. It did retain the depth charge racks, but carried only seven depth charges. It also still had its torpedo tubes, but plans were in hand to remove them and replace them with more 40mm guns during its next refit. The refit was canceled due to the war's end.

In August 1945, *San Juan* sported a Measure 22 color scheme with deck blue decks and navy blue hull, vertical surfaces, and horizontal surfaces above the main deck. It was less colorful than its earlier paint jobs, but more practical, minimizing visibility to searching aircraft.



USS *San Juan* (CL-54) specifications	
Displacement	7,400 tons (full load)
Dimensions	541ft x 53ft x 20ft 6in.
Propulsion	2×steam turbines (2 shafts), 4 boilers (665psi, 850°F), 75,000SHP
Speed	32knts
Crew	46 officers, 766 enlisted
Armor	1.1–3.75in. belt, 3.75in. bulkheads, 1.25in. deck, .75in. gun houses, 2.5in. conning tower with 1.25in. roof
Armament (1945)	16×5in./38cal DP guns (8x2), 10x40mm AA guns (1x4, 3x2), 10x20mm AA guns (10x1), 8 21in. torpedo tubes (2x4), 2 depth charge racks, 14 depth charges

The 1.1in. gun was an interim medium antiaircraft weapon. Mechanically unreliable and lacking killing power, it was used because it was available. The first four Atlantas carried four quad 1.1in. guns. (AC)

The first four Atlantas had 16 5in./38cal guns in eight Mk29 twin-mount turrets, six mounted centerline, three forward and three aft, and two in waist mounts, forward of the stern centerline gun mounts. Each mount was shielded by 0.75in.-thick steel. This would stop shell splinters, but not a direct hit by a 3in. or larger shell. Each mount weighed 108,000lbs.

In addition to its main battery, the Atlantas had a light antiaircraft battery, originally 1.1in. autocannon and .50cal machine guns. By the time *Atlanta* and *Juneau* were fitting out, the Navy recognized both guns were too light. The .50cal gun was never installed on Atlantas, replaced by the 20mm Oerlikon, but the 1.1in. was the only medium antiaircraft gun available during construction.

The 1.1in., nicknamed the "Chicago Piano," was a Navy attempt to develop a medium antiaircraft gun. Development started in 1929, but it did not appear on US Navy ships until 1939. The complex water-cooled guns required a heavy and complicated hydraulic system. Its complexity made it mechanically unreliable.

The gun fired a 1.1in. (28mm) round weighing 1.9lbs, with a 0.034–0.037lb bursting charge. It was fitted with a high-sensitivity fuze to ensure it would explode when it hit wing fabric. But it was too sensitive, suffering bore prematures when fired. It had a practical 100 round-per-minute rate of fire and an effective range of 7,400yds. Although it could reach an altitude of 19,000ft, its effective ceiling was 9,000ft.

The US Navy licensed the 20mm from Swiss gunmaker Oerlikon in late 1940. It immediately went into production, and the first gun was test-fired in July 1941. By the end of the year, the fleet was receiving the gun. *Atlanta* and *Juneau* were modified to accept them during construction. They replaced the .50cal machine guns planned for installation, and were original equipment on all subsequent Atlantas.

Air-cooled, the 20mm Oerlikon fired a 0.53lb round with a 0.271lb projectile. A close-in weapon, it had an effective range of 4,700yds, with a 4,000ft ceiling. It was effective early in the war. Between December 1941 and September 1944, it shot down one-third of all Japanese aircraft downed in the Pacific. After that, kamikaze tactics and higher aircraft speeds reduced its effectiveness. The Atlantas generally mounted manually powered single 20mm guns, but manual twin-mount 20mm versions were occasionally installed.

The Atlantas also carried torpedoes. Plans originally called for them to carry triple torpedo tubes with one set of reloads. These were 1920s mounts landed from heavy cruisers during their 1930s refits. During construction of the first four Atlantas, the Navy was reducing topside weight of Sims-class

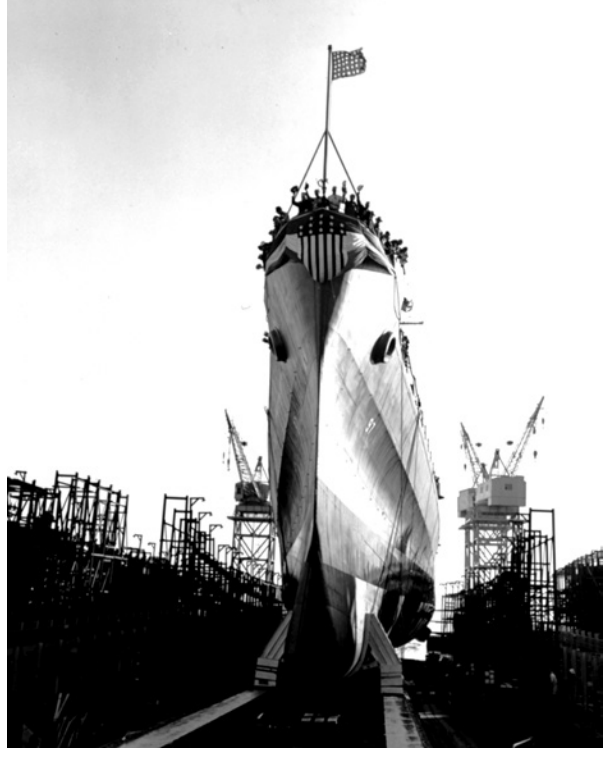
Except for the Omaha class they were replacing, the Atlantas were the only World War II US cruisers with torpedoes. They were also the only cruisers with depth charges. The torpedo tubes, K-gun depth charge throwers, and depth charge racks can be seen in this 1942 shot of *San Juan*. The davits aft of the stern turrets reloaded the K-guns. (USNHHC)

destroyers by removing one of the quadruple torpedo tubes they carried. These were new (the Sims were built between 1937 and 1940); the Navy substituted these for the triple tubes. Reloads were not carried, reducing overall weight.

They carried the 21in. (553mm) diameter Mk15 torpedo, the Navy's standard destroyer torpedo. This torpedo was 22ft 7in. long and weighed 3,438lbs with a 494lb TNT warhead. It used wet-heater propulsion, burning fuel, and compressed air to run a water-cooled turbine. This left a trail of bubbles. It traveled 10,000yds at a 33.5knt setting or 4,500yds at 45knts. These torpedoes suffered the typical drawbacks of US Navy torpedoes – a small warhead and poor reliability. The Atlantas used torpedoes operationally just once in World War II.

Atlantas carried two stern-mounted Mk3 depth charge racks, capable of holding eight Mk6 or Mk9 depth charges, or six Mk7 depth charges. The Mk6 and 9 depth charges had 300–340lbs of TNT. They were the same diameter, with the Mk6 cylindrical and the Mk9 teardrop shaped (to increase sink rate). The Mk7 was bigger, with a 600lb or 400lb TNT charge and a maximum depth setting of 600ft. *Atlanta* and *Juneau* lacked sonar when built.

The second four Atlantas were all built in California, at Bethlehem Steel's San Francisco yard. All four were laid down in 1941 and 1942. This is *Flint* (CL-97) as it begins its slide down the launching way on January 25, 1944. (USNHHC)



VARIANTS, MODIFICATIONS, AND SUBCLASSES

Oakland subclass

Even before the first four Atlanta-class ships were complete, the General Board authorized construction of a further four cruisers: *Oakland* (CL-95), *Reno* (CL-96), *Flint* (CL-97), and *Tucson* (CL-98). All were ordered in September 1940, under the Two-Ocean Navy Act. This was several months after the keels were laid on the first four ships, but a year before *Atlanta* was launched. Originally, they were to be

repeat Atlantas, identical to the first four ships, and intended to serve in the same role – leading destroyer flotillas.

All four were built by Bethlehem Steel at their San Francisco shipyard. They were built in pairs. *Oakland* and *Reno* respectively were laid down in July and August 1941 and launched in October and December 1942, while *Flint* and *Tucson* were laid down in October and December 1942 and launched in January and September 1944.

Combat experience led to significant design changes during construction of these follow-on vessels until they constituted a separate subclass of the Atlanta-class cruisers. By the summer of 1942, it was obvious that Atlantas were outstanding antiaircraft platforms. By November 1942, following the first naval battle of Guadalcanal, it was equally obvious they did not belong in surface combat.

Seagoing experience revealed the first four Atlantas as dangerously top-heavy after refits adding antiaircraft guns and radar. If the repeat Atlantas included all the desired changes without modifying the original design, they would be even less stable.

Sea trials conducted by *Juneau* led its captain to recommend removal of its waist guns, replacing them with smaller antiaircraft guns. He wrote: "The two waist 5-inch turrets are not considered sufficiently valuable to compensate for their weight and the men required to man them." He also questioned the depth charges' value. The ship's turning circle (large relative to that of a destroyer or submarine) and its handling characteristics made using it to attack a submerged submarine impractical.

B

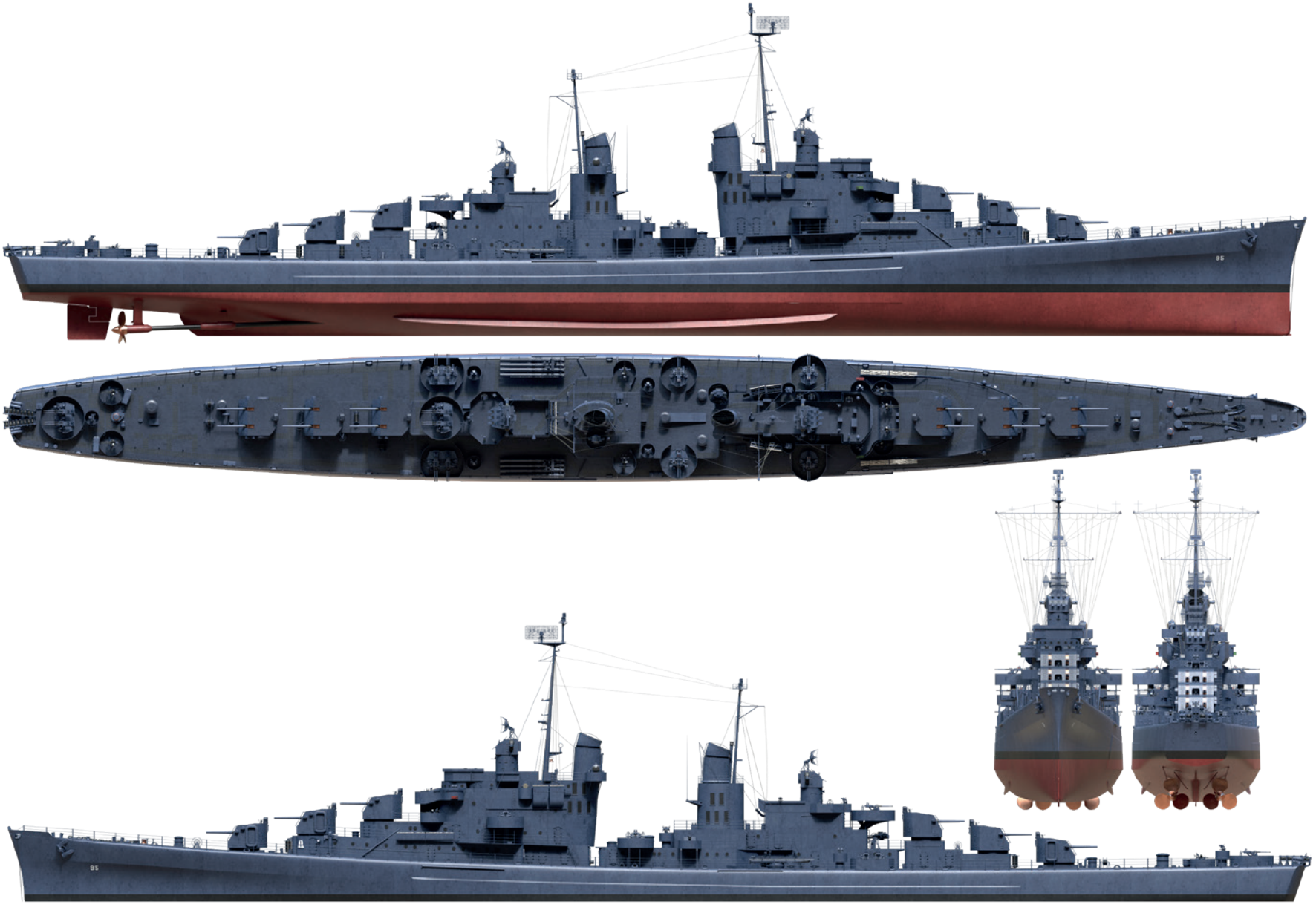
OAKLAND, 1945

USS *Oakland* (CL-95) specifications	
Displacement	7,400 tons (full load)
Dimensions:	541ftx53ftx20ft 6in.
Propulsion	2×steam turbines (2 shafts), 4 boilers (665psi, 850°F), 75,000SHP
Speed	32knts
Crew	26 officers, 523 enlisted
Armor	1.1–3.75in. belt, 3.75in. bulkheads, 1.25in. deck, .75in. gun houses, 2.5in. conning tower with 1.25in. roof
Armament	12×5in./38cal DP guns (8x2), 24x40mm AA guns (4x4, 4x2), 16x20mm AA guns (8x2), 8 21in. torpedo tubes (2x4), 2 depth charge racks,14 depth charges

Oakland was the lead ship of the four Atlanta-class cruisers authorized in 1940. Built at Bethlehem Steel's shipyard in San Francisco, California, it was laid down on July 15, 1941, launched on October 23, 1942, and commissioned on July 17, 1943. The class were intended as "repeat-Atlantas," identical to the original four. Combat experience led to multiple modifications while being built. The most visibly obvious was substitution of the twin 40mm mounts for two waist 5in. turrets. They were also fitted with the most advanced radar suite available when they were commissioned. They had depth charge racks, but no depth charge throwers. As the war progressed, all of the Atlanta-class cruisers were increasingly viewed as antiaircraft ships. With every refit, more antiaircraft guns were added.

By January 1945, *Oakland* may have been the most extreme example of antiaircraft gun creep. The twin 40mm guns on the waist and behind the aft funnel had been replaced with quad 40mm mounts, giving it a total of 24 40mm guns (the fantail 40mm was already a quad 40mm); the twin mounts near the bridge were retained. Additionally, the 20mm count was up to 16 barrels, distributed in eight twin-mount positions.

In 1945, *Oakland* retained the splinter camouflage pattern given it in 1944. As was typical of the



Largely internally identical to the first four Atlantas, the final four Atlanta-class cruisers are sometimes called the Oakland subclass, or "Oaklands," after the lead ship in the group, *Oakland* (CL-95). The biggest visual difference came from replacing the waist 5in. guns with 40mm mounts. (AC)

In October 1940, the Bureau of Shipping recommended removing the waist 5in. mounts, replacing them with quad 1.1in. guns. The General Board concurred. This permitted adding 30 tons of superstructure steel for splinter protection. British reports of their combat experience showed greater topside splinter protection was necessary. Areas around the bridge, upper control stations, and communications stations were protected with 3/4in. special treatment steel (STS) armor and the gun directors with 2½in. armor. The bridge was modified from the closed elliptical-front bridge of the original ships to a square-faced open design. The open bridge permitted better control during air actions.

Despite recommendations by several captains of the original Atlantas, the depth charge racks and quad torpedo tubes were retained. The six K-gun depth charge throwers installed on *Atlanta* and *Juneau* in post-commissioning refits were eliminated from the Oaklands.

The light antiaircraft battery was beefed up. Plans called for the waist 5in. turrets to be replaced by quad 1.1in. mounts, and the fantail 1.1in. mount was to be added during construction. This doubled the number of these mounts to six, from the three originally installed on *Atlanta* and *Juneau*. While building, 40mm Bofors were substituted for the 1.1in. guns, along with a twin or quad 40mm on the fantail, and twin 40mm elsewhere. Design plans called for eight single-mount 20mm Oerlikons. By launch, this had been increased to 14.

Atlanta and *Juneau* were built without radar. The Oaklands left the shipyard with multiple radars. They had an SC air search radar on the foremast, and SG surface search radars on both the foremast and mainmast. The two Mk37 fire control directors had Mk4 FD fire control radar antennae atop them. Their observations were incorporated in direction of the cruiser's 5inch battery. The radar and other observational information were consolidated in a Combat Information Center, located aft of the bridge and used directing a battle.

The extra antiaircraft guns, radar, and superstructure armor erased the weight saving gained by removing the waist turrets. Moreover, the new weight – antennae, armor, and most of the new 20mm guns – was above the waist turrets, making the new cruisers top heavy. The maximum righting arm was reduced to 1ft. This was considered barely acceptable for destroyers, and well short of the 2ft maximum in other new cruiser designs. When the Oaklands were low on fuel, stored deep in the hull counteracting the weight topside, the righting arm shrank dangerously.

The Oaklands were optimized as antiaircraft ships. They kept their depth charge racks and sonar, but not the K-gun launchers. As built, all 40mm mounts had twin Bofors. During refits, quad Bofors were sometimes substituted, especially on the fantail mounts. More 20mm Oerlikons were added, including the pair visible in the bows of *Oakland*. (USNHHC)

The builders conducted a ruthless campaign to reduce topside weight. Although the Oaklands retained their torpedo tubes and depth charge racks when launched, no spare torpedoes and few spare depth charges were carried. Most of the boats' amidships and the towering boat crane were removed to allow extra 20mm guns. Superstructure ammunition storage for the 40mm and 20mm guns was limited to ready ammunition. Resupply was brought up from the magazines.

The modifications implemented while building the Oakland subclass made them formidable antiaircraft ships, only minimally reducing their surface and underwater combat capabilities. The 12 5in. guns were centerline mounted. The Oaklands could put more steel in the air in one direction than any other US Navy cruiser. Even the fast battleships with 20 5in. guns could only fire ten to either broadside. Only the two surviving Atlantas, which could fire 14 guns off either beam, had greater antiaircraft power.

As the opportunities for surface action diminished and the chances of air attack increased during the war, these ships became increasingly valuable. They were the US Navy's best antiaircraft warships.

Juneau class

The Oaklands were repeat Atlantas, using the same plans, modified during construction. As the class proved its value as an antiaircraft ship, the Navy decided to build more of them, incorporating the combat lessons learned in the Pacific. The result was the Juneau class, comprising *Juneau* (CL-119), *Spokane* (CL-120), and *Fresno* (CL-121).

The Juneaus used virtually the same hull form as the *Atlanta* (they were 6in. longer and just 1in. wider), but were redesigned, internally within the hull and from the weather deck up. Major modifications corrected the stability problems of the earlier ships. Three ships were ordered, and design work started on the class in January 1943. The keel of the lead ship was laid down in September 1944; construction on the third started in February 1945. They were built by Federal Shipbuilding and Drydock in Kearny, NJ, the same yard that built *Atlanta* and the original *Juneau*.

They used the same propulsion plant as the Atlantas, and much the same internal layout. Watertight integrity was improved by eliminating all transverse bulkhead doors below the second deck. The CIC (Combat Information Centre) was moved deep inside the ship, within the armor box protecting the machinery and magazines. This cost fuel storage space, but the

Completed postwar, the Juneau class were redesigned Atlantas, using the same hull form. USS *Spokane* shows the major differences in this photo. Four 5in. turrets were relocated a deck lower, the funnels were closer together, depth charges were omitted, and a more sophisticated radar suite was installed. (USNHHC)

trade-off was viewed as worth it. The relocation improved the ships' ability to fight after damage.

The big changes were above the weather deck. The Juneaus were pure antiaircraft warships, so the depth charge racks and torpedo tubes were omitted to allow the largest possible antiaircraft battery. Sonar was also removed. The superstructure was redesigned to create a lower profile. Turrets number 2, 3, 4, and 5 were dropped a level. Turrets 2 and 5 were dropped to the weather deck, on the same level as turrets 1 and 6. Turrets 3 and 4 were dropped to the same level turrets 2 and 5 had been in the earlier ships, superfiring over the other four 5in. mounts.

C

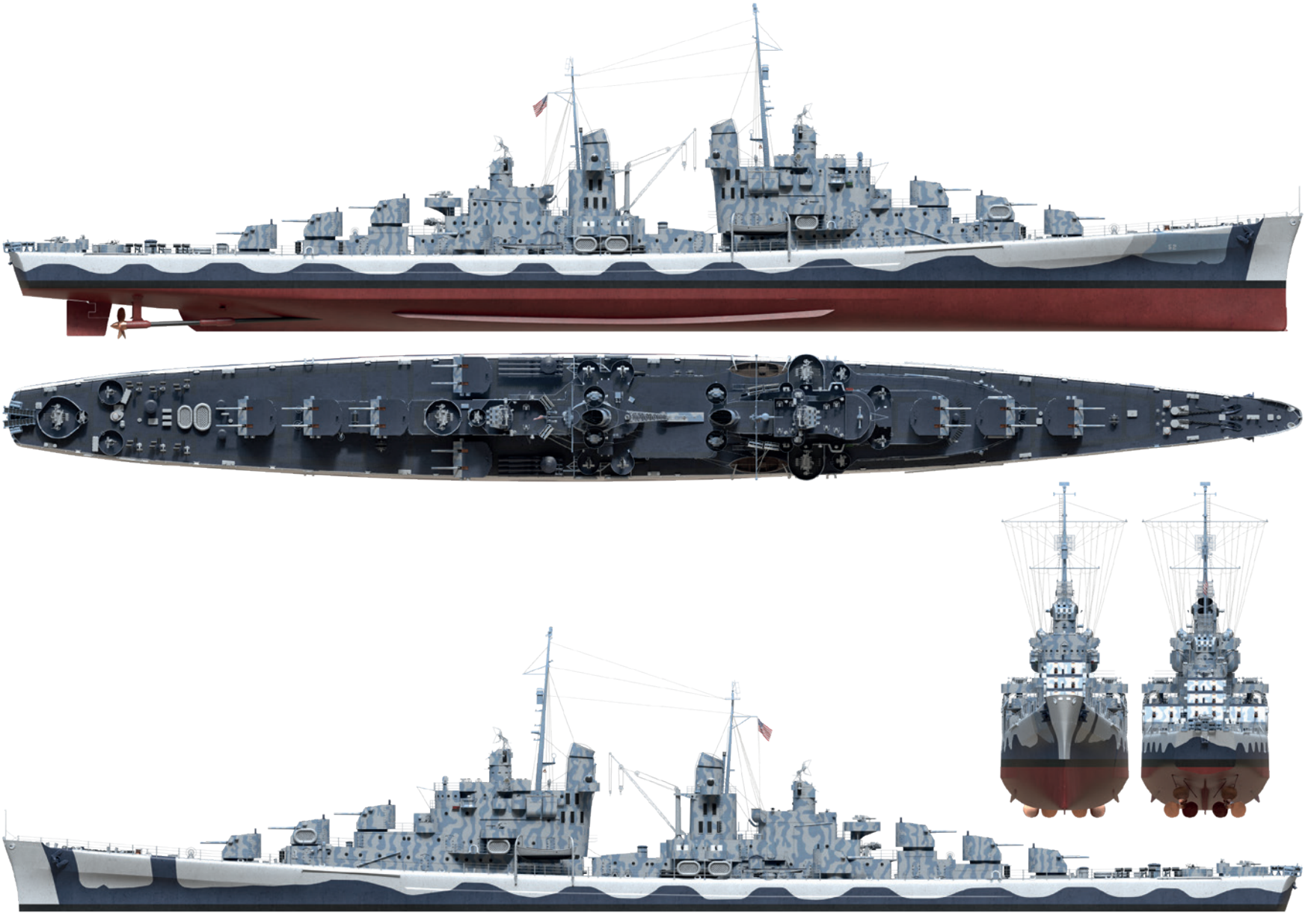
JUNEAU, 1942

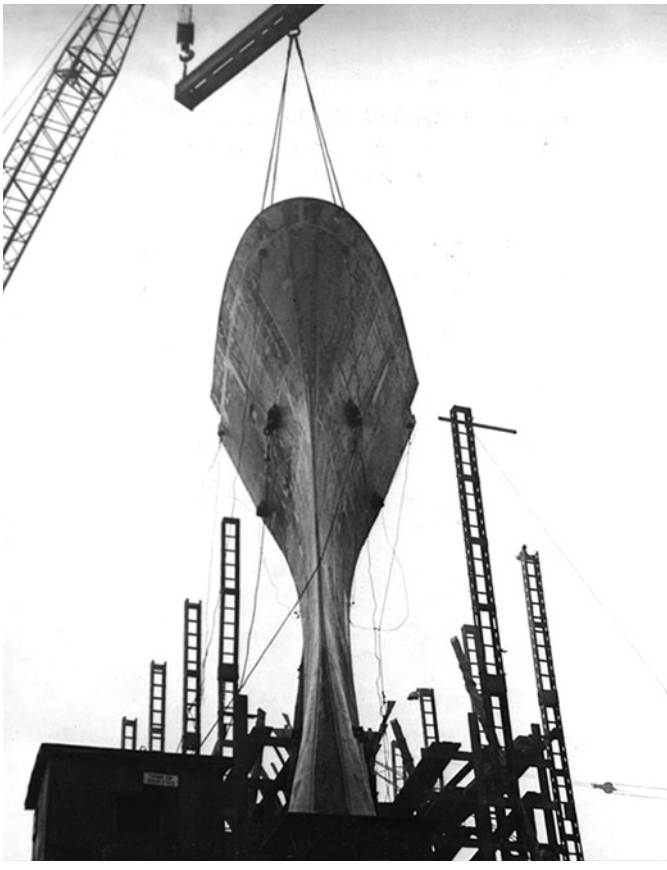
USS *Juneau* (CL-52) specifications	
Displacement	7,400 tons (full load)
Dimensions	541ft x 53ft x 20ft 6in.
Propulsion	2×steam turbines (2 shafts), 4 boilers (665psi, 850°F), 75,000SHP
Speed	32knts
Crew	26 officers, 523 enlisted
Armor	1.1–3.75in. belt, 3.75in. bulkheads, 1.25in. deck, .75in. gun houses, 2.5in. conning tower with 1.25in. roof
Armament	16×5in./38cal DP guns (8x2), 16x1.1in. AA guns (4x4), 8x20mm AA guns (8x1), 8 21in. torpedo tubes (2x4), 2 depth charge racks, 6 K-gun depth charge throwers, 44 depth charges

The second Atlanta-class cruiser built at the Federal Shipbuilding and Drydock Company, Kearny, New Jersey, *Juneau* was the last of the first four Atlantas sent to the Pacific theater. From April–May 1942, it was part of a task group patrolling Martinique to prevent Vichy French warships there from escaping to France.

Its Pacific career was short and spectacular. Arriving in September 1942 with the carrier *Wasp*, *Juneau* was present when *Wasp* was torpedoed and sunk. It fought at the battle of Santa Cruz Islands, helped repel a Japanese bomber attack in Iron Bottom Sound on November 12, 1942, and was torpedoed and battle damaged during the surface engagement fought there after midnight on the next day. Japanese submarine I-26 torpedoed and sank *Juneau* later that day as the cruiser was steaming to Nouméa in New Caledonia for repairs.

This illustration depicts *Juneau* as it would have appeared immediately before the naval battle of Guadalcanal, where it was sunk. It had left the builder's yard with a non-standard paint measure, with the ship an overall mottled ocean gray and haze gray. By November, the hull had been repainted as shown in a combination of white, navy blue, and ocean gray paint. It had been equipped with a fantail quad 1.1in. AA gun and K-gun depth charge launchers when sunk. It was





By 1944, prefabricated construction was making inroads in shipbuilding. This is the bow structure of *Spokane* being lowered onto the building ways for installation. (AC)

There were further changes. The superstructure was one deck lower, except for the forward 5in. director, which was raised a level over where it had been on *Atlanta*. Both directors were relocated. The forward 5in. director was shifted further back, while the aft director was moved forward. This placed them farther from the guns, reducing blast and vibration, and improving aiming accuracy.

To reduce the Juneaus' profile, the Bureau of Ships wanted to trunk the two funnels together, paralleling similar changes on the late Baltimore-class heavy cruisers and Cleveland-class light cruisers. However, merging the funnels proved impractical on the Juneaus. Instead, the funnels were moved closer together, which eliminated space for the boat crane and boats stored amidships in the original design. The Bureau of Ships viewed the boats and boat crane as liabilities, anyway, as they raised the CG without improving fighting capability.

The bridge was completely redesigned. The new bridge provided a clear overhead view, improving direction of antiaircraft response. The cruisers were also provided with improved radar systems and a relocated CIC designed to the latest standards, integrating radar observations and improving internal communications. They were fitted with the most recent versions of the SC-2 air search radar, SG surface search radar, and Fire Direction radar systems. Antennae for the FD radar were mounted on the directors.

The Juneaus were also fitted with a heavy antiaircraft battery. As built, they carried 32 40mm Bofors and 16 20mm Oerlikons. Twenty-four Bofors were in six quad mounts and eight in four twin mounts. Two of the quad 40mm guns were mounted centerline, superfiring the number 3 and 4 5in. turrets. The remaining four quad mounts and two of the twin mounts were mounted at the superstructure deck level on either beam. The twin mounts were on either side of the ship just aft of the bridge, one pair of quads were on either side of the lead funnel, and the final pair of quads were where the waist 5in. mounts had been located on the Atlantas. The final pair of twin mounts were mounted on the fantail.

The 20mm Oerlikons were in twin mounts distributed along either side of the superstructure. Two were on the superstructure deck level just forward of the bridge, while the rest were on the main deck. These guns had been mounted higher on the Atlantas and Oaklands.

The result was a much lower CG and a larger maximum righting arm. Two-thirds of the 5in. mounts were one deck lower, as were most of the 40mm mounts. The 20mm positions had been dropped two to three levels lower. The

heavy depth charges and torpedoes, and the equipment to launch them, were gone, removing more weight from the deck. The total weight of steel in the superstructure had been reduced, making the ships much more seaworthy than their older sisters.

None of these ships saw service in World War II, arriving too late for combat. *Juneau* was launched in July 1945, a month before the war ended. *Spokane* was launched in September, a month after Japan's surrender, and *Fresno*'s keel did not touch water until March 1946. None of them were commissioned until 1946.

By 1950, the 40mm Bofors was obsolete. Plans were made to replace them on Juneau-class cruisers with 3in./54cal automated twin mounts. The change was only made to *Juneau*. These guns were installed during its 1952 refit. (USNHHC)

By then, the arrival of the jet age was making them obsolescent. The 20mm gun was as useless against jets as the 1930s .30cal machine gun had become against metal monoplanes by 1941. The 40mm Bofors, meanwhile, had too short a range to be useful. The Bureau of Ships replaced the 40mm with automated 3in. antiaircraft guns on *Juneau*, but abandoned plans to do so on *Spokane* and *Fresno*. The larger Baltimore and Cleveland-class cruisers were better suited for jet-era upgrades.

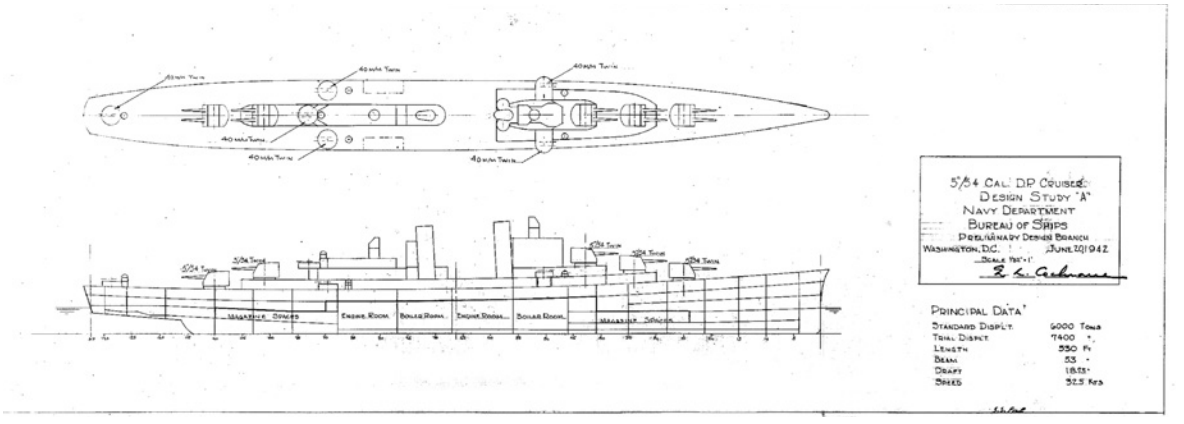
CL-154 class

The ultimate antiaircraft cruiser was the never-built CL-154 class. Six were authorized in 1944, but the project was canceled in March 1945, following naval budget cuts. It was briefly revived in May 1945, but canceled entirely after the war's end.

Its origins lay in the canceled Montana-class battleship. The Navy's Bureau of Ordinance (BuOrd) developed a new 5in./54cal dual-purpose gun as the secondary battery for the Montanas. The 5in./54 had a range one-third longer and a striking velocity greater than the 5in./38. The projectile was 20 percent heavier and the rate of fire 20 percent faster. The design work on the twin turret was complete. They had been ordered and would be available in 1945, and the gun itself was entering production when the Montanas were canceled.

The BuOrd was seeking a home for these guns, which seemed a perfect fit for an improved antiaircraft cruiser. At first, the Bureau of Ships considered converting two Juneau-class cruisers, then under construction, by substituting five of the heavier 5in./54 turrets for the six 5in./38 mounts intended for the last two Juneaus. Since the redesign would delay completion of these cruisers, conversion was discarded.

Instead, the Bureau of Ships authorized work to design a new cruiser around these guns, authorizing hull numbers 154–159 to the new design. While similar to the earlier cruisers, they used a new hull form, with a waterline length of 580ft and a waterline beam of 55ft 6in., and a standard displacement of 7,370 tons. Lower pressure but higher temperature boilers



The CL-154 class attempted to use the 5in./54cal twin mounts intended for the canceled Montana-class battleship in an antiaircraft cruiser. Several designs were considered, including this one. The war's impending end led to cancelation before the ships were named. (USNHHC)

(600psi and 875° F) produced 100,000SHP, which would drive the new design to a top speed of 34.5knts. It was to have 3.5in. belt armor and 1.25in. deck armor over an armored citadel covering the machinery spaces and magazines.

The main armament would be 12 5in./54 guns in six twin turrets, probably arranged in the same manner as those on the Juneaus, with turrets 2 and 5 on the same level as numbers 1 and 6. The initial design called for the ships to carry 14 Mk4 or Mk7 600lb depth charges in two stern racks. Further antiaircraft protection would be provided by 28 40mm guns in quad mounts and 24 20mm guns in twin mounts.

A further redesign eliminated the 40mm Bofors and reduced the 20mm suite to 16 20mm Oerlikons in eight twin mounts. The 40mm mounts were to be replaced with seven twin 3in./70cal turrets. The 3in./70 was a new gun, under development in 1945. It was to be used in an autoloading turret, with a rate of fire of 90–100 rounds per minute. While it showed promise, it was nowhere near production in 1945.

Had World War II continued, work on the CL-154 class might have proceeded. As it was, Japan's surrender led to cancelation of the program for a second and final time in late 1945. The 5in./54 was eventually used on the Midway-class carriers and, ironically, the post-World War II Japanese Naval Self Defense force Murasame and Akizuki-class destroyers. Development of the 3in./70 design stalled after World War II. They became operational in the 1950s.

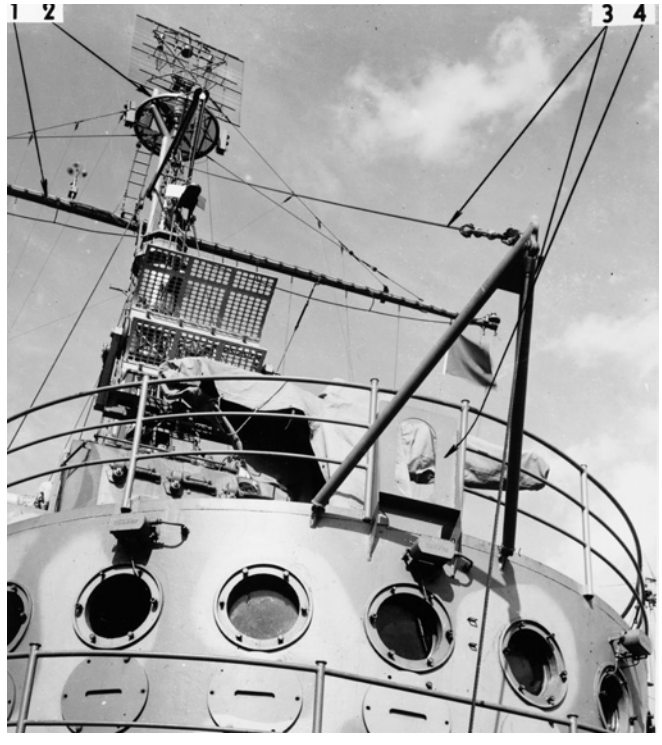
As built, *Atlanta* and *Juneau* lacked radar, which was installed during post-commissioning refits. In November 1941, *Atlanta* was without mast-top ground and air search or director-mounted fire-direction radar antennae. (USNHHC)

Wartime modifications

All eight Atlantas, the original four and the four follow-on Oaklands, went through continual modification during World War II. This was especially true of the four that saw the longest wartime service: *San Juan*, *San Diego*, *Oakland*, and *Reno*. *Atlanta* and the first *Juneau* were also altered several times during their short lives, while the second *Juneau* went through a major rebuild in 1952. It

is safe to say that each of the three Atlanta classes started as almost identical sister ships. Yet due to constant modification and overhauls, except possibly for the last two Oaklands (*Flint* and *Tucson*) and the last two Juneaus (*Spokane* and *Fresno*), no two of these cruisers were identical in appearance after their first refit.

The most important modification was one of the earliest: the addition of radar. *Atlanta* and *Juneau* were built before radar was widely available. Both were completed without radar, and remained without it until February 1942. Due to their antiaircraft potential, they were given a high priority for getting radar. During separate February 1942 refits, an SC-2 air search radar and two FD-4 fire direction radars were added to both ships. The SC-2 antenna was mounted on the foremast mast top; the FD-4 antennae placed atop the fore and aft Mk38 gun directors. By early fall, a subsequent refit added an SG surface search radar to both ships.



After a refit in March 1942, *Juneau* had an SC air search radar (antenna atop the foremast) and Mk4 fire-direction radar (on the director, above the bridge). Radar made these ships more effective against aircraft. Note the oval-fronted, closed bridge used on the first four Atlantas. (USNHHC)

All three radars provided important capabilities. The SC-2 radar spotted incoming aircraft up to 75 miles distant, providing 20–25 minutes advance warning of incoming raiders. SG radar could spot enemy warships at 15nm. FD-4 provided fire control information to the 5in. guns for targets as far away as 30,000yds (roughly15nm, the effective range of the 5in./38). Since it provided altitude, it could direct fire against both aircraft and ships. Radar was installed during construction from *San Diego* on.

Constant modification and upgrade of these cruisers' secondary antiaircraft battery was of importance second only to the addition of radar. By the battle of Midway, it was apparent that the Atlantas' role would be that of an antiaircraft cruiser. By the start of the second year of the Pacific War, it was clear this would be their main role, their main battery being too weak for surface combat. It was so powerful an antiaircraft weapon the Navy had to play to that strength. This was done in two ways: adding more effective medium antiaircraft weapons and increasing the total number of medium and light antiaircraft guns carried by these ships.

The original four Atlantas were built with quad 1.1in. guns. While the 1.1in. gun's deficiencies were known, they were all that was available in 1942. By late 1942, plans were in hand to replace these with the 40mm Bofors, a far more effective weapon. Built under license from Bofors, a Swedish company, it fired a 1.985lb round (over twice the size of the 1.1in.) 11,000yards. Its effective ceiling was 11,000ft. It was air-cooled and had a simple, rugged, and reliable design. Its practical rate of fire was 90 rounds per minute.

The gun was adopted by the Navy in June 1941, when it purchased the license from Bofors. Adapted to US standards, a twin Bofors production

The 1.1in. guns were replaced with 40mm Bofors as they became available. In this photo showing *San Diego* after an April 1944 refit, a quad 40mm is on the fantail mount, while the aft centerline mount has a twin 40mm. (USNHHC)

version appeared in January 1942 and a quad mounting in April that year. They were first installed on new-construction battleships and aircraft carriers, its first operational appearance being in July 1942. Although the US pressed them into mass production, not until mid-1944 were enough 40mm guns available to fully replace the 1.1in.

Atlanta and *Juneau* were both sunk before their 1.1in. guns could be replaced by Bofors. *San Diego* and *San Juan* were fitted with 40mm mounts during refits in early 1943. Each received four twin-mount 40mm guns, replacing the quad 1.1in. off either side of the bridge, forward of the number 4 5in. and on the fantail. Over the next two years, more 40mm guns were added, usually by substituting a quad 40mm for a twin 40mm or putting a twin 40mm position on either beam between the funnels.

Similar growth was seen in the number of 20mm Oerlikons mounted, especially from 1943 until mid-1944. The 20mm, paired with the Draper-developed Mk14 gunsight, was the most effective aircraft killer of that period. After Japan introduced kamikaze tactics and increased use of twin-engine aircraft, the gun proved less effective, lacking the stopping power to prevent a kamikaze pilot from crashing into his target. Despite that, 20mm numbers were increased as morale-raisers. Often, single Oerlikons were replaced with twin mounts.

D

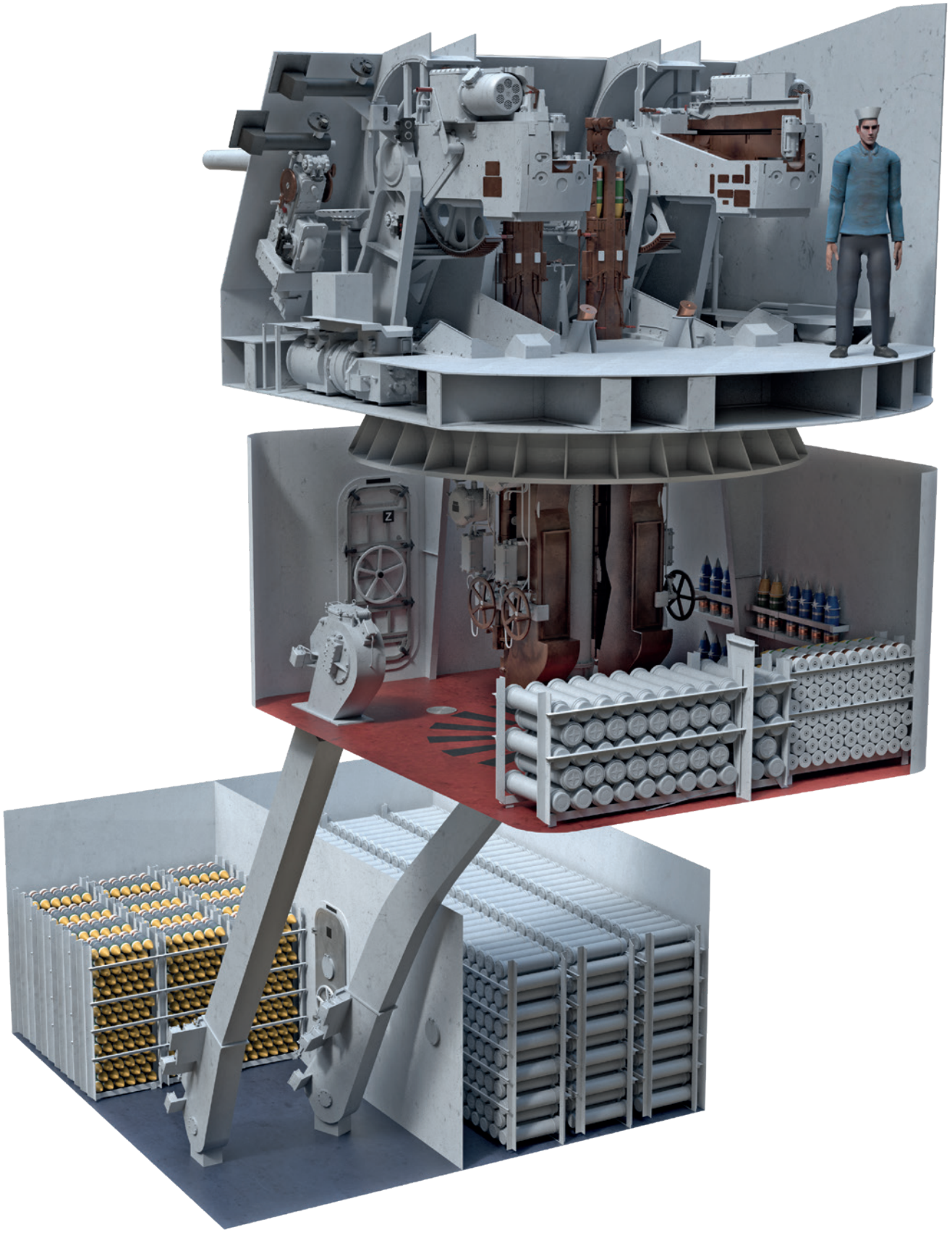
5IN./38 TURRET

The heart of the Atlanta-class cruisers were their 5in./38cal gun turrets. The first four had eight Mk29 twin 5in. turrets. The repeat-Atlanta Oakland subclass had six, as did the follow-on Juneau class. The turrets could train (rotate) at up to 25 degrees per second and elevate at 15 degrees per second. They could elevate from horizontal to the maximum elevation of 85 degrees in under six seconds, and rotate 180 degrees in just over seven seconds. This permitted them to track the aircraft of World War II as they approached.

The turret assembly had three parts, shown in this cutaway: the gun house, the upper handling room, and the lower handling room. The lower handling room received the shells and powder cartridges from two separate magazines located on their level. Men in the magazines fed either the shell or powder to the handling room through a flash-proof scuttle. Those in the lower powder room placed these in a hoist that lifted them to the upper handling room. The team in the upper handling room transferred the shell and powder to a second set of hoists, which lifted them to the gun house.

A projectile and rammer man on each gun placed the shell in the breech, after which the powder man loaded the powder cartridge. The breech was closed. The turret was pointed and aimed by a pointer and trainer, while the fuze setter and sight setter set the range. The gun captain ordered the gun fired, after which the hot case man and shell guard man extracted the shell casing to ready the gun for the next round.

It took a team of 33–39 men distributed between the lower and upper handling rooms to keep the guns firing at maximum speed. Additional men in the magazines carried the shells (which weighed 55lbs) and cartridge (which weighed 27½–29½lbs) from magazine racks to the scuttles.



To improve stability, the US Navy made a relentless effort to reduce topside weight on the Atlantas. One thing frequently removed was the towering boat crane located between the two stacks, along with most of the ships' boats. (USNHHC)

Both 40mm and 20mm guns were installed everywhere imaginable and in incredible numbers. *Oakland* and *Reno* had two single-mount Oerlikons in forecastle tubs, forward of the anchors. They were removed during a later refit, as they were ineffective at high speeds. An early 1945 refit equipped *Oakland* with no fewer than 28 40mm guns in a mixture of quad and twin mounts and 16 20mm guns in eight twin mountings. How many and where these guns were located varied between ships, and depended on when and where the last refit was conducted.

The US Navy also had a love-hate relationship with the Atlantas' antisubmarine and torpedo armament. One of the first modifications done after launch to both *Atlanta* and *Juneau* was adding six K-gun depth charge throwers. This gave the cruisers the same depth charge suite as new-construction destroyers. The depth charges were also heavy and mounted on the weather deck, reducing the maximum righting arm. Similarly, the deck-mounted quad torpedo tubes with their torpedoes also reduced the righting arm. Each torpedo weighed 3,800lbs, whereas each mount added another 6,000lbs.

Issues with metacentric height dogged both the Atlanta class and Oakland subclass throughout the war. Modifications on both variants had to be done carefully lest the righting moment became too small. Adding antiaircraft guns risked stability unless their addition was countered by removing other topside weight. The most obvious candidate for removal was the towering boat crane and the ships' boats stored between the funnel. Removing these increased the righting arm and provided space for 20mm guns.

After that, it got more difficult. Removing depth charges and torpedoes reduced the ships' attack capability. Yet the Atlantas' speed and wide turning radius made them ineffective ASW craft. As the war progressed, the opportunity for the Atlanta to launch torpedoes against enemy warships steadily diminished.

The first to go were the K-guns, never installed on the Oaklands and removed from *San Juan* and *San Diego* during1943 refits. Next removed were the spare depth charges. After that, in 1943 and 1945, the depth charge racks and torpedo tubes were removed during refits. Some cruisers kept both, while others had both removed. Ultimately, the antiaircraft mission became the sole purpose of the Atlantas.

OPERATIONAL HISTORY

INTRODUCTION

Eight Atlanta-class cruisers were commissioned during World War II (four Atlantas and four Oaklands). All were built in pairs, at three different shipyards, with the lead ship in each pair commissioned one to three months before the other ship in the pair, with both ships following associated careers. The follow-on Juneau class were completed and commissioned after World War II ended. All three were built in the same shipyard, but only *Juneau*, the lead ship, was launched before VJ Day.

A photographer aboard USS *San Juan* at the battle of Santa Cruz illustrates what Atlanta-class cruisers did best: fill the sky with bursting 5in. shells. (USNHHC)

The eight Atlantas had extremely busy wartime careers, almost all of it in the Pacific. Two were sunk during the first naval battle of Guadalcanal. A third was nearly lost after being torpedoed by a submarine in 1944, but survived. It saw no further combat in World War II. There were never more than four Atlantas in combat at any one time during the Pacific War. More typically, only three were available due to repairs and refits. These cruisers defined scarce resources.

Except for the second *Juneau*, none of the other Atlantas or Juneaus saw service during the Korean War. After short post-World War II careers in the late 1940s, all others were laid up by 1950. The second *Juneau* joined them in retirement in 1955.

1941–43

USS *Atlanta*, CL-51, was launched on September 6, 1941, from its slip at Federal Shipbuilding and Drydock Company in Kearny, New Jersey. The sponsor was Margaret Mitchell, author of *Gone With the Wind*. On the same day, *San Juan*, CL-54, the fourth Atlanta-class cruiser, also entered the water from its slip at Bethlehem Shipbuilding Corporation's Fore River Shipyard in Quincy, Massachusetts.

They were the second and third Atlanta-class cruisers launched. *San Diego*, CL 53 was launched on July 26, two months earlier. *Juneau*, CL-52, joined its three sisters in the water on October 25. A warship is incomplete at launch. A fitting out period follows, during which the ship is finished, machinery is added, guns installed, and myriad other details completed.

Despite being launched after *San Diego*, *Atlanta* was the first of the four to enter service, being commissioned on December 24, 1941, two weeks after the US entered World War II. It was followed by *San Diego*, *Juneau*, and *San Juan*, in that order. All three were commissioned early in 1942, *San Diego* on January 10, *Juneau* on February 14, and *San Juan* on February 28.

None went immediately into action. Their shakedown cruises, especially those of *Atlanta* and *Juneau*, revealed the deep-pitch three-bladed propellers initially installed caused severe vibration when cruising at speeds between 21 and 30knts – the speeds at which most combat operations took place.

Atlanta passes behind *Enterprise* after the battle of the Eastern Solomon Islands, fought on August 24, 1942. *Atlanta* is believed to have shot down five of 18 bombers attacking *Enterprise*, which suffered one hit, buckling the flight deck. (USNHHC)

The propellers were replaced on all cruisers, with *Atlanta* and *Juneau* going through refits in March and April, respectively, to fix the problem. Propellers on *San Diego* and *San Juan* were apparently replaced immediately after commissioning.

Atlanta spent April, steaming to Pearl Harbor, arriving on April 23. While traveling, it reconnoitered Clipperton Island for enemy activity but found none. It sailed from Pearl Harbor on May 10, rendezvousing in Nouméa, New Caledonia, with Task Force 16. TF16, commanded by William Halsey, included the carriers *Enterprise* and *Hornet*. *Atlanta* was present when TF16 fought at the battle of Midway, on June 4. It screened *Hornet*, proving a remarkably effective antiaircraft ship.

By September, *Atlanta* had been joined by its three sisters. *San Diego* arrived first, reaching San Diego, California, on May 16 and escorting the *Saratoga* with its task force to Pearl Harbor. It just missed Midway. On June 15, relieving *Atlanta*, *San Diego* went with *Hornet* to the South Pacific. After maintenance, *Atlanta* rejoined TF16 by July 15. *San Juan*, after its shakedown cruise, joined Task Force 18, built around the carrier *Wasp*, at Hampton Roads, Virginia. After departing Hampton Roads, it stopped

E

ATLANTA AT FIRST GUADALCANAL

The Atlanta-class cruisers were built for surface combat, but their first experience in a night surface action demonstrated their weakness in that role. The naval battle of Guadalcanal was a four-day brawl that ran from November 12–15, 1942. It came about due to the Japanese attempt to bombard the US airbase at Guadalcanal, with the US reinforcing the Guadalcanal garrison and trying to stop the bombardment. It resulted in two surface night actions.

Atlanta was part of a five-cruiser, eight-destroyer US Navy force in Savo Sound (now Iron Bottom Sound) as the sun set on November 12. Their goal was to stop a Japanese force comprising two battleships, one light cruiser, and 11 destroyers. Shortly after midnight on Friday, November 13, the two forces made contact. The US spotted the Japanese first, but the Japanese were first to open fire.

Atlanta was the lead cruiser in the column of US ships. When Japanese searchlights were deployed at 0150hrs, they quickly found *Atlanta*, whose high superstructure gave it a prominent silhouette. Its flag bridge was bathed in light. *Atlanta* immediately responded with its 5in. battery, extinguishing the searchlight on the Japanese destroyer *Akatsuki*. While *Akatsuki* sank later that night, it was too late: other Japanese ships, including a battleship, opened up on *Atlanta* with shells and torpedoes.

Admiral Scott was killed as shells hit the flag bridge. One, possibly two, torpedoes launched by Japanese destroyers hit *Atlanta*. Engine rooms flooded and it went dead in the water. Worse was to come when, as the US line steamed past the crippled *Atlanta*, the cruiser *San Francisco*, aiming at a distant Japanese warship, pumped two 8in. salvos at the enemy, but the rounds went through *Atlanta*, causing further damage.

Atlanta fell out of the battle and survived until daylight came. Despite damage-control efforts, water continued entering faster than it could be pumped out. Shortly after 1400hrs, it was abandoned and sunk with a scuttling charge.

This illustration shows *Atlanta* at 0151hrs, one minute after *Akatsuki* caught the ship in its

Ships of TG17 maneuver at high speed to avoid attacking enemy aircraft at the battle of the Santa Cruz Islands on October 26, 1942. *San Diego* and *Juneau* are to the right of the photograph, protecting the carrier *Hornet*. (USNHHC)

at San Diego before arriving at the Solomon Islands on June 30. *Juneau* remained in the Atlantic and Caribbean until August, its primary task being to blockade the Vichy French islands of Martinique and Guadeloupe. It was sent to the Pacific on August 22, joining TF18 on September 10.

All four played active roles in the Guadalcanal campaign. *San Juan* participated in the August 7 invasion, bombarding Tulagi and witnessing the battle of Savo Island, with the unengaged ships screening the transports. *Atlanta* and *San Diego* accompanied the carriers providing invasion-day air support. *Atlanta* and *San Juan* participated in the battle of the Eastern Solomons, fought from August 23–25. *Atlanta* screened *Enterprise*, while *San Juan* guarded *Wasp*. *Juneau* and *San Diego* were both present on September 15 when *Wasp* was torpedoed and sunk by *I-19*. They rescued survivors.

At the battle of Santa Cruz Islands, fought on October 26 and 27, all four Atlantas were in the Southwest Pacific. *San Juan* screened TF16 with *Enterprise*, while *Juneau* and *San Diego* were with TF17 protecting *Hornet*. *Atlanta* was with *Washington* and TF64. Operating separately, *Atlanta* did not participate in the carrier action. The three cruisers with the carriers proved effective. On the first day, *San Diego* and *Juneau* conducted an antiaircraft barrage that shot down 20 of 27 attacking bombers. *Hornet* was badly damaged and sank the next day. *Juneau* switched to TF16 at noon. With *San Juan*, it repelled four waves of Japanese aircraft. *Enterprise* was also damaged, but survived. On the last wave, *San Juan* took a bomb hit aft. It was back in action, fully repaired, by November 24.

Both *Atlanta* and *Juneau* were at Iron Bottom Sound during the 1942 naval battle of Guadalcanal. On November 12, 1942, the day before both were crippled during a post-midnight surface night action, they were instrumental in breaking up an attack by G4M bombers on Allied shipping in the sound. Smoke from two bombers they downed is shown here. (USNHHC)

The other three cruisers took part in the naval battle of Guadalcanal, fought from November 12–15. *San Diego* screened TG16 with *Enterprise*. On November 12, *Atlanta* and *Juneau* were off Guadalcanal, as part of TG62.4 and TG67.4 respectively. Their job was screening transports carrying reinforcements and supplies to Guadalcanal and to intercept any Japanese surface forces attempting

to bombard Henderson Field on Guadalcanal. At 1410hrs, both ships helped break up an attack by 25–30 G4M torpedo bombers. The two cruisers shot down ten of them.

Atlanta and *Juneau*, along with eight destroyers, two heavy, and one 10,000-ton light cruiser, intercepted a Japanese battle group shortly after midnight on Friday, November 13, as it passed between Guadalcanal and Savo. The battle group contained two battleships, one light cruiser, and 11 destroyers. *Atlanta* headed the line of US cruisers, led by four destroyers. *Juneau* was the last cruiser, trailed by four more destroyers.

Juneau was torpedoed and sunk the day after first Guadalcanal. Aboard were brothers Joseph, Francis, Albert, Madison, and George Sullivan, who opted to serve together on *Juneau*. All died following *Juneau*'s sinking. This tragedy changed Navy policy from encouraging brothers to serve on the same ship to forbidding them from doing so. (USNHHC)

A wild nighttime melee ensued. *Atlanta*, its tall superstructure outlined by Japanese searchlights, was hit by gunfire from multiple Japanese warships. Then it was torpedoed. As it drifted, powerless, it was hit by 8in. fire from the US cruiser *San Francisco*. *Juneau* was hit by a torpedo a few minutes later. Dawn broke to reveal a sound full of cripples.

In addition to *Atlanta* and *Juneau*, *San Francisco* and *Portland* were badly damaged. Two US destroyers were crippled; two others had sunk during the night, as had a Japanese destroyer. Two further Japanese destroyers and the battleship *Hiei* were crippled. One of the destroyers escaped. *Hiei* and the destroyer *Yudachi* were sunk that day. *Atlanta* and two US destroyers were scuttled. Later that day, as *Juneau* and other damaged warships steamed to Nouméa, Japanese submarine *I-26* attacked *San Francisco*. The torpedoes missed *San Francisco*, but one hit and sank *Juneau*. Only ten of its crew survived.

The naval battle of Guadalcanal (which ended on 15 November with a battleship duel won by the US) marked the end of the struggle for Guadalcanal. A nearly year-long lull occurred as the Japanese Imperial Navy retired to await a decisive opportunity to strike the US Navy. *San Diego* and *San Juan* operated with the *Saratoga* in the Southwest Pacific until June 1943. They were joined by *Oakland*, the first of the repeat Atlantas, that fall. It was commissioned in July 1943.

All three became active in November 1943. *Oakland* and *San Diego* participated in Operation *Galvanic*, the capture of Tarawa in the Gilbert Islands. *Oakland*, on its first combat operation, played a notable role. When 24 G4Ms made a night attack on Task Group 50.3 after it raided Kwajalein, *Oakland* got permission to lure the bombers away from the group. It fell behind the formation, turning on its running lights, rather like drawing moths to a light. *Oakland* used radar-guided guns to kill two and assist in the kill of two other raiders. *San Juan*, operating with *Saratoga* and light carrier *Princeton*, screened them during their November 7 raid on Rabaul, which crippled the Japanese fleet there.

1944–45

With the start of 1944, the pace of the US Navy's offensive in the Pacific accelerated. The Essex-class fleet carriers and Independence-class light carriers began arriving in late 1943. By January 1944, the US had enough to form the Fast Carrier Force, the massed carriers operating in three to five task groups of three or four carriers each.

By then, the Atlantas had slipped almost exclusively into the role of antiaircraft cruisers. Their utility in an antiaircraft role was proven over four major carrier battles and numerous encounters with shore-based Japanese aircraft. The days of light cruisers leading swarms of destroyers on torpedo runs (for which the Atlantas were intended) had passed.

The loss of half the then-available Atlantas in the naval battle of Guadalcanal, the sole surface action in which they participated, revealed their vulnerability to gunfire and torpedoes. Thereafter, they largely guarded carrier groups. There were plenty of pre-war Treaty cruisers and wartime-construction Cleveland-class and Baltimore-class cruisers available when cruisers were needed for surface combat. The Atlanta-class cruisers filled a vitally needed role as antiaircraft vessels and were too scarce to casually risk. The three Atlantas available in January 1944 were typically allocated one to a carrier task group.

In February, *San Diego* was assigned to Task Group 58.2, protecting carriers *Essex*, *Intrepid*, and *Cabot*, while *San Juan* was in TG58.4, screening *Saratoga*, *Princeton*, and *Langley*, and *Oakland*, in TG58.1, was guarding *Enterprise*, the new *Yorkton*, and *Belleau Wood*. In each case, they were part of a screen of four cruisers. *San Diego* and *Oakland* participated in Operation *Hailstone*, the Fast Carrier Force attack on the Japanese base of Truk. *San Juan* was in TG58.4, which provided air cover for the near-simultaneous US invasion of Japanese-held Eniwetok.

In March, *San Diego* went to San Francisco Bay for a refit, which was completed in May. *San Juan* and *Oakland* accompanied the Fast Carrier Force as it supported operations north of New Britain and east of the Philippines. They were present at the March invasion of Emirau, landings at Hollandia, and carrier raids against the Japanese-held islands in the western Carolines. *Oakland* broke up a major Japanese airstrike in the Carolines with its gunfire. They also screened the carriers from air attack in April during strikes on Palau, Yap, and Wotje, and a second major airstrike at Truk.

Oakland, the first of four "repeat" Atlantas, appeared in the Pacific in late 1943. It is at the right of the photo defending against attacking enemy aircraft during the December 1943 Marshall Islands raid. (USNHHC)

The three were joined by *Reno*, the second of four repeat Atlantas laid down in 1941. Commissioned on December 28, 1943, it completed its training and shakedown activities by April 1944, joining the Fast Carrier Force in May. With the refitted *San Diego*, it joined *San Juan* and *Oakland* for the Fast Carrier Force raids on Marcus and Wake Islands that month.

Reno was part of Task Group 38.3 guarding two fleet and two light carriers. After light carrier *Princeton* was hit by a bomb, *Reno* assisted in fighting fires aboard *Princeton*, coming close to use its fire hoses to battle the blazes. It is seen here approaching *Princeton* from the stern. (USNHHC)

All four participated in June's invasion of the Marianas and the associated battle of the Philippine Sea. Admiral Spruance, commanding the Fifth Fleet for this operation, placed one in each of the four carrier task groups present to best screen the carriers. This was the first carrier air battle since Santa Cruz Islands in October 1942. It was also the last time the Japanese mounted a major carrier air effort against the US Navy. (At the battle of Leyte in October, the Japanese carriers served as decoys. Thereafter, Imperial Navy aviation was land-based.)

While US Navy aircraft accounted for three-quarters of the Japanese aircraft lost during the battle, around 100 were shot down by antiaircraft fire. By then, the Atlantas had both radar-directed 5in. gunnery and 5in. shells armed with proximity fuzes. The radar-controlled proximity fuze detonated the shell at the nearest approach point to an aircraft. Earlier fuzes required a direct hit or a timed burst. The proximity fuze, introduced in 1943, increased antiaircraft fire effectiveness significantly.

In August, TG58.1 and TG58.2 raided the Bonin Islands. Air reconnaissance spotted a Japanese convoy around the Bonin Islands, which was attacked by carrier aircraft. Cruisers (including *Oakland*) and destroyers were detached to mop up the survivors. The destroyers engaged and sank a small oiler and the destroyer *Matsu*. At 2145hrs on August 4, *Oakland* spotted a 7,500-ton cargo ship and sank it with gunfire. It participated in a bombardment of Chichi Jima's harbor the next day.

In mid-October, as preparation for the invasion of the Philippines, the Fast Carrier Force mounted a series of raids against Okinawa, the Ryukyus, and especially Formosa. The Fast Carrier Force changed from TF58 to TF38, with a change of command from Admiral Spruance to Admiral Halsey. The objective was to eliminate Japanese aircraft that could oppose landings scheduled at Leyte later in October. The Imperial Navy, assuming these attacks presaged an invasion of Formosa, threw every available warplane they had against the US carriers. Three days of intense airstrikes – by both sides – resulted.

San Juan was sent to San Francisco for an overhaul in September, so was unavailable until mid-November. *San Diego*, *Oakland*, and *Reno* accompanied TF38 during these raids, split between two of four carrier task groups. The Japanese air raids kept them busy. *San Diego* and *Oakland*, with TG38.2, drove off Japanese aircraft attacking their group on October 13. They were less successful the next day, when a dive bomber slipped through

On November 3, 1944, Japanese submarine I-41 torpedoed *Reno*. *Reno* survived, despite suffering massive flooding aft, which can be seen in this photo. Since the machinery space was flooded, and the shafts damaged, it had to be towed to Ulithi for temporary repairs. (USNHHC)

their fire and damaged the carrier *Hancock*. A torpedo bomber crashed into the stern of *Reno*, defending TG38.3, on October 14, temporarily disabling the aft-most turret. *Reno* was back in action within a week.

The ships in the carrier groups without Atlantas fared less well. On October 13, *Franklin* in TG38.4 had a Japanese aircraft crash into it. Heavy cruiser *Canberra*, in TG38.1, was torpedoed that day. The next day, light cruiser *Houston*, transferred from TG38.2 to TG38.1, was also hit by a Japanese aerial torpedo. Halsey, commanding TF38, chose to tow both cruisers to safety rather than scuttle them. He formed a division of crippled ships and their escorts. (Officially it was called CRIP DIV 1 – but unofficially it was dubbed BAIT DIV 1 by the more cynical participants.) *San Diego* joined these ships, escorting them to safety.

The three were again present at Leyte, where *Reno* assisted *Princeton* after it was hit by a bomb. The fires the strike caused ran out of control. *Reno*, along with the Cleveland-class *Birmingham*, assisted with firefighting. *Reno* came close enough that when *Princeton* listed suddenly, its flight deck struck *Reno*, disabling one of the cruiser's 40mm mounts. Eventually *Princeton*'s fires triggered explosions that badly damaged *Birmingham*. Unable to check the fires, *Princeton* was abandoned and scuttled by torpedoes fired by *Reno*.

F

SAN DIEGO AT FORMOSA

By 1944, the Atlanta-class cruisers had settled into the role of antiaircraft cruiser, protecting carrier task groups. This tied them to the Fast Carrier Force, Task Force 38 or TF58 (depending upon whether Halsey or Spruance was commanding the fleet). Due to the limited number of these cruisers, typically only one was assigned to each task group to spread them around.

The role they played can be illustrated by *San Diego*'s actions during TF38's carrier raid on Okinawa and Formosa in October 1944. Part of the buildup for the invasion of Leyte and the return to the Philippines later that month, this carrier sweep was intended to reduce available Japanese aircraft prior to the invasion. From October 12–15, TF38 swept the Philippine Sea from the Ryukyus to Formosa, launching devastating airstrikes on Japanese airfields. In turn, the Japanese, fearing the attacks heralded an invasion of Formosa, launched all-out counterstrikes against the US carriers with every available aircraft.

San Diego and *Oakland* were guarding TG38.2 as the sweep began and were with it when Japanese aircraft attacked it on October 14. At roughly 1530hrs, TG38.2 was attacked by 25 Yokosuka D4Y "Judy" dive bombers. US Navy fighters on combat air patrol intercepted the aircraft and shot down most of them, but nine survived to reach the ships. At that point, *San Diego* opened up, initially with its 5in. guns. The 40mm and eventually 20mm guns joined in as the aircraft neared *San Diego*, shooting down two of the nine and forcing several others to turn back. Other ships also joined in with antiaircraft fire. Ultimately, only two bombers were able to reach and hit the carrier *Hancock* with bombs, causing minor damage.

This illustration shows the opening phase of *San Diego*'s response. The 5in. and 40mm guns are blazing away. The real work is being done by the 5in. guns, which are radar-directed with shells

USS *Flint* (CL-97) joined the Pacific Fleet in December 1944. It is shown here at Ulithi in March 1945 as the fleet prepared for the invasion of Okinawa. (USNHHC)

On November 3, it was *Reno*'s turn to be torpedoed. Japanese submarine *I-41* hit *Reno* with two torpedoes on its port side while it was operating with TG38.3. One torpedo was a dud, and eventually defused. However, the second exploded deep, causing massive flooding and leaving *Reno* dead in the water. It was attacked unsuccessfully the next day by another submarine. The fleet tug *Zuni* towed *Reno* 1,500nm to Ulithi. After temporary repairs, it steamed back to the Panama Canal, reaching the Charleston Navy Yard in March 1945. Repairs there took seven months. *Reno* missed the rest of the war, but participated in the postwar Operation *Magic Carpet*.

The Fast Carrier Force was back up to four Atlantas in December. *San Juan* returned on November 21, being joined by *Flint* on December 27. Launched on March 25, 1944, and commissioned on August 31, it joined in time to accompany the fleet on its raid into the South China Sea and support of the Luzon invasion in January 1945.

All four participated in the invasion of Iwo Jima and Okinawa. By then, Japan's conventional air force was largely spent. Instead, the focus became defense against the kamikaze threat. These aircraft deliberately crashed into ships, requiring them to be shot down before reaching their target. The Atlantas provided air defense for the carrier groups until the war's end.

The kamikaze campaign was in full swing by the time Okinawa was invaded, with the Atlantas playing an important role in fleet defense. In this picture, taken from *Enterprise* on April 11, 1945, *Oakland* is on the horizon, engaging attacking Japanese aircraft. (USNHHC)

The Oakland-subclass *Tucson*, the eighth Atlanta, joined the Fast Carrier Force in June 1945. It was launched on September 3, 1944, commissioned on February 3, 1945, and finished its shakedown cruise in May. It arrived at the tail end of the Okinawa campaign, but participated in the fleet's July attacks on the Japanese Home Islands.

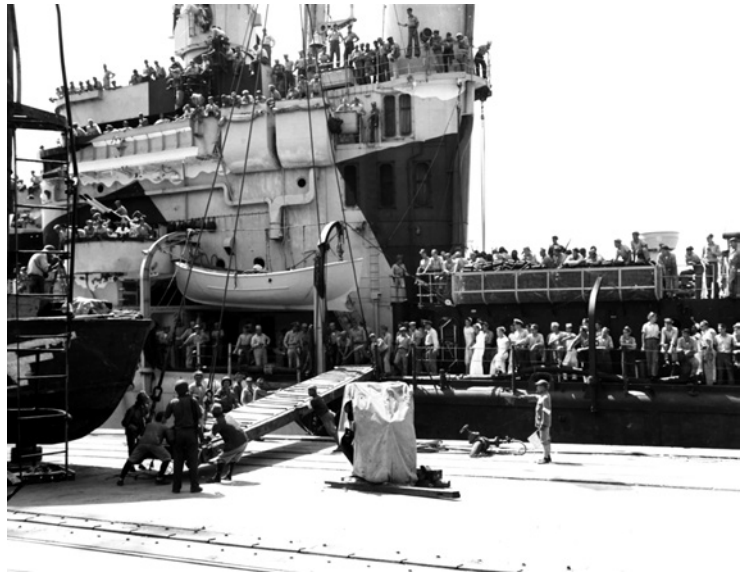
Postwar

Japan surrendered on August 15, 1945, bringing World War II to an end. *San Diego* entered Tokyo Bay on August 27, docking at Yokosuka Naval Base, becoming the first Allied warship to land in Japan. It started the occupation of Japan and accepted the surrender of the battleship *Nagato*. *San Juan* and *Oakland* joined the Third Fleet in Sagami Wan that day, entering Tokyo Bay on August 29. Parties from *San Juan* liberated inmates at

Omori and Ofuna POW camps and Shanagawa Hospital. All three cruisers were present for the surrender ceremony held on September 2.

Flint took up station off Nii-jima in the Izu Islands on August 24. It served as a homing beacon for transport aircraft from Iwo Jima carrying occupation troops to Japan. It also acted as a rescue ship, and finally entered Tokyo Bay on September 10.

Tucson covered occupation forces moving into Japan by ship. On September 20, it cleared Japan, stopping at Okinawa before returning to San Francisco, where it arrived on October 5. At the end of October, it arrived at San Diego, where it served as an antiaircraft gunnery training ship until August 1946.



The first US Navy ship to dock in Japan after Japan's surrender was *San Diego*. It tied up at Yokosuka Naval Base on August 27, 1945. This photograph, taken three days later, shows a Japanese work party rigging the gangway as *San Diego*'s sailors line the ship's decks. (USNHHC)

The other five sister ships participated in Operation *Magic Carpet*, which brought US servicemen and their war brides to the United States while repatriating Axis POWs to Europe and Asia. *Reno* served in the Atlantic part of Operation *Magic Carpet*; the other four operated in the Pacific.

The three Juneau-class cruisers, laid down between September 1944 and February 1945, were unfinished when the war ended. *Juneau* (CL-119), the lead ship, had been launched on July 15, 1945. It was still fitting out at the war's end. *Spokane* (CL-120) would be launched in September, a month after the war ended. *Fresno* (CL-121) joined its two sister ships in the water on March 5, 1946, 13 months after its keel was laid. The CL-154 class was canceled once and for all in September 1945.

The end came quickly for the two surviving original Atlantas, *San Diego* and *San Juan*, both being decommissioned in November 1946 at Bremerton, Washington. They were joined by *Reno* that same month. All three were placed in the Pacific Reserve Fleet, based in Washington State. *Flint* lasted six months longer, reporting to Bremerton in January 1946, but not being decommissioned until May 1947.

Oakland and *Tucson* remained active longer. *Oakland* went through a major refit in 1946, emerging for service in January 1947. It served in the Pacific for the next 18 months, much of that time in the East China Sea. It became the flagship for a destroyer flotilla operating out of Tsingtao and Shanghai. It departed China in July 1948, returning to San Diego on August 8. On July 1, 1949, *Oakland*, then at San Francisco, was decommissioned and placed in the Pacific Reserve Fleet there.

All of the Atlanta-class and Juneau-class cruisers were reclassified from light cruisers (CL) to antiaircraft cruisers (CLAA) on March 18, 1949. It made little difference. By then, all but *Juneau* and *Spokane* were decommissioned. While postwar histories sometimes referred to these ships as CLAAs during World War II, that classification is anachronistic. They were CLs during the war.

The three Juneau-class cruisers spent most of their careers in peacetime overseas deployments, generally in Europe and the Mediterranean. Here, *Fresno* makes a port call at Dublin, Ireland, in May 1948. (AC)

The Juneau-class cruisers remained in service a little longer than the Atlantas – although except for *Juneau*, not much longer. The youngest, *Fresno*, was the first to go. Commissioned in November 1946, it conducted two overseas deployments to Europe and the Mediterranean between 1947 and 1949. It was laid up in reserve in May 1949. *Spokane*, commissioned in May 1946, spent its brief career in the Atlantic between 1946 and 1949. After a brief stint as a reserve training ship starting late in 1949, it was decommissioned at New York in February 1950.

G

RENO FINISHES *PRINCETON*

As destroyer leaders, the Atlantas were intended to lead destroyers and make torpedo attacks. However, none of the Atlanta-class cruisers had the opportunity to fire torpedoes at an enemy warship over their naval careers. In the only surface battle at which Atlanta-class cruisers were present (first Guadalcanal on November 13, 1942), both *Atlanta* and *Juneau* were out of action before they could fire their torpedoes. Both were disabled by torpedoes launched by Japanese destroyers.

Ironically, the only time an Atlanta-class cruiser fired its torpedoes, except during practice, their target was another United States Navy warship, the light carrier USS *Princeton*.

During the battle of Leyte, at 0938hrs on October 24, 1944, a D4Y dive bomber evaded interception and hit the *Princeton* with a 250kg bomb. It penetrated deep into the ship, igniting a massive fire in the hangar deck. The fires could not be brought under control, despite assistance from cruisers *Birmingham* and *Reno* and three destroyers.

As the day advanced, the fires got worse. Ships assisting *Princeton*, including *Birmingham* and the destroyer *Irwin*, had been damaged by explosions aboard *Princeton* as they fought fires. *Reno* was damaged when *Princeton* lurched over suddenly as *Reno* was alongside. Power to the pumps was out and the magazines could not be flooded. It was too dangerous to tow *Princeton*, several earlier attempts having failed. Finally, the order was given to scuttle the carrier. At 1600hrs, Captain Buracker, commanding *Princeton*, ordered it abandoned. Shortly after Buracker became the last man to leave *Princeton*, Admiral Frederick Sherman, commanding the task group, ordered *Princeton* torpedoed. Initially, *Irwin* got the job, but *Princeton* had damaged the destroyer's torpedo director badly enough that *Irwin*'s torpedoes proved more dangerous to itself than *Princeton*. Sherman instead gave the assignment to *Reno*.

Shortly after 1700hrs, *Reno* fired two torpedoes at the stationary *Princeton*, less than a mile away. Both ran straight and true, striking *Princeton* as aimed, under the forward gasoline tank. The

illustration depicts the results of the torpedo hits.

USS *Juneau*, by then CLAA-119, was one of the few US Navy warships in the Far East when North Korea invaded the south in June 1950. It became an active participant in the Korean War, frequently bombarding North Korean positions. Here, it takes on fuel and ammunition at Sasebo, Japan, in July 1950. (USNHHC)

Juneau had the most active career. After a year on the Atlantic seaboard and Caribbean in 1946, *Juneau* made three deployments in the Mediterranean between 1947 and 1949. It was transferred to the Pacific in November 1949, arriving in Bremerton, Washington, in mid-January 1950. It arrived at the US naval base at Yokosuka, Japan, on June 1 to serve as flagship of Cruiser Division 5.When the Korean War started on June 25, 1950, it was one of the few warships at hand. On June 29, it bombarded enemy shore installations at Bokuko Ko. On July 2, *Juneau* fought and sank three torpedo boats, the first naval engagement of the Korean War. It also participated in a July 18 shore bombardment at Yondock which slowed North Korean troop movements.

On October 29, *Juneau* joined the Seventh Fleet's Fast Carrier Force operating off the Korean coast, serving as an airplane guard for daily carrier airstrikes. In April 1951, it departed Korean waters for an overhaul at Long Beach, California. Among other changes, fire control systems were upgraded and 14 3in./50cal guns (in automated twin-mount turrets) replaced the 40mm mounts. It returned to Korea in April 1952, operating in support of carrier airstrikes until November 5.

Juneau transferred to the Atlantic in April 1953, conducting three deployments in the Atlantic, Caribbean, and Mediterranean in 1953 and 1954. It returned to the East Coast of the US in February 1955 and was laid up in the reserve fleet in March.

All seven ships remained in the reserve fleet until March 1959, when *San Diego*, *San Juan*, *Oakland*, and *Reno* were struck from the Navy List. *Juneau* was struck in November 1959. All five were scrapped in 1960 and 1961. *Flint, Tucson*, and *Fresno* were struck in 1965 and 1966, and scrapped shortly after that. *Spokane* was retained as a sonar test ship and reclassified as AG-191. It remained in reserve, unused in that role until 1972. It was struck from the Navy Vessel Register in April 1972, the last of the Atlanta's brood. It was sold for scrap in 1973.

Tucson was the last surviving Atlanta-class cruiser, retained as a test hulk until 1970. It was sold for scrap on February 24, 1971. This picture shows it at Terminal Island, California, in the process of being dismantled. (USNHHC)

CONCLUSION

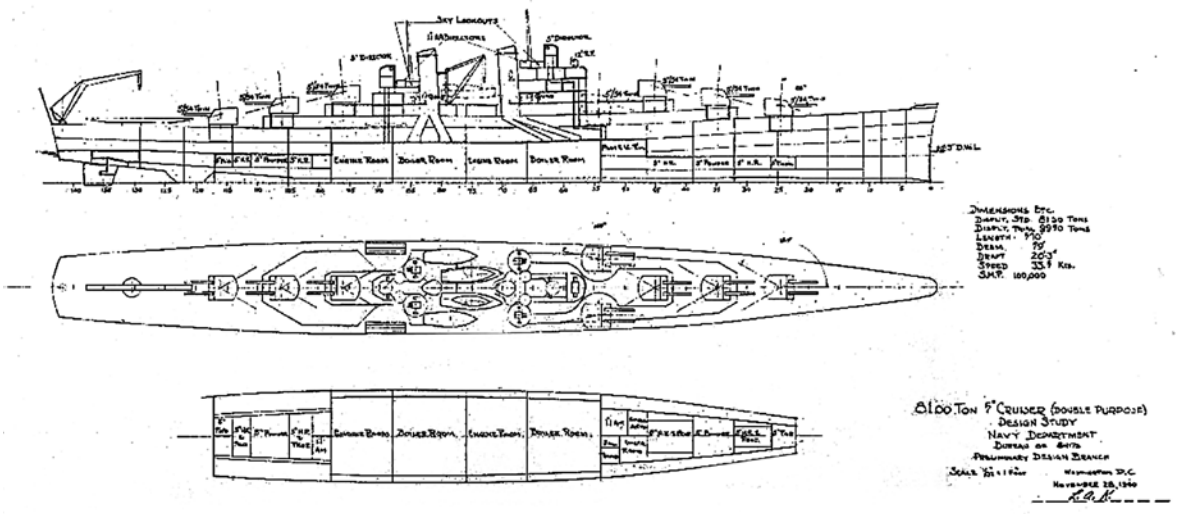
The Atlanta class was an experiment, different from the mainstream for US Navy cruisers. Smaller instead of bigger, they were built to fill a role that was obsolescent by World War II, leading destroyers on torpedo runs. Instead, they proved superlative in a second role: antiaircraft defense.

Ordered prewar, they were built in limited numbers to fill a niche in a naval limitations treaty that had been abandoned by the time their keels were laid. By the time the Navy realized their usefulness as antiaircraft cruisers, ship construction resources had been almost fully committed elsewhere. Only three follow-on Juneau-class cruisers were built, arriving too late to participate in the war for which they were intended.

The Atlantas' 5in./38cal guns in powered twin mounts were almost perfect weapons against the aluminum-clad, propeller-driven monoplanes of World War II. When guided by radar gun-laying and firing proximity-fuze shells, the 5in./38cal gun became the war's deadliest heavy antiaircraft artillery. Atlantas could fire a greater broadside of 5in./38cal shells than any other US Navy warship. They were kept outfitted with the Navy's best radar systems whenever they underwent refit.

Almost as soon as their day arrived, it departed, the jet and rocket age making the Atlantas obsolete. The increased speeds of jet aircraft and missiles left the 20mm Oerlikon and 40mm Bofors worthless. While the new 3in./50cal gun was an efficient medium antiaircraft gun substitute for the Bofors, the 5in./38cal, and even the new 5in./54cal gun, was inadequate as a heavy antiaircraft weapon. The jet age required surface-to-air missiles (SAMs), which necessitated greater tonnage to support than the 5in./38cal.

The Cleveland and Baltimore-class and postwar Des Moines-class cruisers were larger and better suited to be outfitted with SAMs than the smaller Atlantas. Having lost primacy as an antiaircraft ship, the Atlantas lost their mission. Destroyers were more effective ASW ships, and cost less to maintain. The surface torpedo attack was as obsolete as the cavalry saber charge. Furthermore, Atlantas lacked the space to be comfortable flagships for destroyer squadrons.



The Navy Board considered numerous versions of antiaircraft cruisers to supplement the Atlantas. This design was one considered in 1940. Its displacement was ten percent larger than that of the Atlantas, and it would have carried a scout aircraft. (USNHHC)

The US Navy disposed of them as quickly as possible for almost-new warships. None were preserved. Their physical legacy is small. A 5in. turret from *Reno* is at the US Navy Museum at Washington D. C. The base of one of *Tucson*'s turrets was used as the rotating mount of a Van de Graaf generator at the University of Arizona in Tucson, remaining in service until 2005. The *Oakland*'s foremast is now displayed at Middle Harbor Shoreline Park in Oakland.

FURTHER READING

Norman Friedman's excellent *U.S. Cruisers* and Glenn Arnold's less-known but equally excellent *Atlanta Class Cruisers in World War II* provide much useful information on the class. For ship histories, I primarily relied on a combination of the Navy's *Dictionary of American Naval Fighting Ships* entries for the ships and the Pacific theater volumes of Samuel Morison's 15-volume *History of United States Naval Operations in World War II*. Technical details about other systems in the Atlantas were provided by the books and sites listed below.

http://navweaps.com/ (for details on weapons)

https://www.navsource.org/ (a useful photo site, but even more helpful as a source of information of the ships)

References marked with an * are available online

Arnold, Glenn R., *Atlanta Class Cruisers in World War II*, W. R. Press, New York, NY (1998)

Friedman, Norman, *Naval Anti-Aircraft Guns and Gunnery*, Naval Institute Press, Annapolis, Maryland (1981, 2013)

Friedman, Norman, *Naval Radar*, Naval Institute Press, Annapolis, Maryland (1981)

Friedman, Norman, *U.S. Cruisers: An Illustrated History*, Naval Institute Press, Annapolis, Maryland (1984)

Morison, Samuel Eliot, *History of United States Naval Operations in World War II, Volume IV: Coral Sea, Midway, and Submarine Actions: May 1942 – August 1942*, Little, Brown, Boston, Mass (1949)

Morison, Samuel Eliot, *History of United States Naval Operations in World War II, Vol. V: The Struggle for Guadalcanal, August1942 – February 1943*, Little, Brown, and Company, New York, NY (1949)

Morison, Samuel Eliot, *History of United States Naval Operations in World War II, Vol. VI: Breaking the Bismarcks Barrier: 22 July 1942 – 1 May 1944*, Little, Brown, and Company, New York, NY (1950)

Morison, Samuel Eliot, *History of United States Naval Operations in World War II, Volume VII: Aleutians, Gilberts and Marshalls, June 1942 – April 1944*, Little, Brown, Boston, Mass (1951)

Morison, Samuel Eliot, *History of United States Naval Operations in World War II, Volume VIII: New Guinea and the Marianas, March 1944 – August 1944*, Little, Brown, Boston, Mass (1953)

Morison, Samuel Eliot, *History of United States Naval Operations in World War II, Volume XII: Leyte: June 1944 – January 1945*, Little, Brown, Boston, Mass (1958)

Morison, Samuel Eliot, *History of United States Naval Operations in World War II, Volume XIII: The Liberation of the Philippines: Luzon, Mindanao, the Visayas: 1944–1945*, Little, Brown, Boston, Mass (1959)

Morison, Samuel Eliot, *History of United States Naval Operations in World War II, Volume XIV: Victory in the Pacific: 1945*, Little, Brown, Boston, Mass (1960)

Naval Historical Center, *Dictionary of American Naval Fighting Ships*, Vol I–VIII and I-A, Washington, D. C. (1959–84) (available online at https://www.history.navy.mil/research/histories/ship-histories/danfs.html)

Wildenberg, Thomas, *Hot Spot of Invention: Charles Stark Draper, MIT, and the Development of Inertial Guidance and Navigation*, Naval Institute Press, Annapolis, Maryland (2019)

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USNHHC – United States Navy History and Heritage Command, Washington D. C.

Other sources are listed in full.

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To Sebastian, a fellow model-maker and honorary grand-nephew.